QL99
.N1
S57
1830

THE

BOTANIC PHYSICIAN:

BEING A

COMPENDIUM OF THE PRACTICE OF PHYSIC,

UPON

BOTANICAL PRINCIPLES;

CONTAINING ALL THE PRINCIPAL BRANCHES NECESSARY TO THE

STUDY OF MEDICINE,

AS

ANATOMY; PHYSIOLOGY; SURGERY; CAUSES, SYMPTOMS AND CURE OF DISEASES; MIDWIFERY; MATERIA MEDICA; PHARMACY, BOTANY, &c.

TOGETHER WITH A GREAT VARIETY OF

USEFUL RECIPES.

BY ELISHA SMITH,

President of the New York Association of Botanic Physicians.

New York:
MURPHY & BINGHAM, PRINTERS,
No. 75, Wall Street.

1830

Mo. Bot. Garden
1909

SOUTHERN DISTRICT OF NEW-YORK, ss.

BE IT REMEMBERED, That, on the 8th day of May, A. D. 1830, in the 54th year of the Independence of the United States of America, *Elisha Smith*, of the said District, hath deposited in this Office the title of a Book, the right whereof he claims as Author, in the words following, to wit: "*The Botanic Physician:* being a compendium of the Practice of Physic upon Botanical Principles; containing all the principal branches necessary to the study of Medicine, as Anatomy; Physiology; Surgery; Causes, Symptoms, and Cure of Diseases; Midwifery; Materia Medica; Pharmacy, Botany, &c.; together with a great variety of useful recipes. By *Elisha Smith*, President of the New-York Association of Botanic Physicians."

In conformity to the Act of Congress of the United States, entitled "An Act for the encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the authors and proprietors of such copies, during the time therein mentioned." And also to an Act, entitled "An Act, supplementary to an Act, entitled an Act for the encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the authors and proprietors of such copies, during the times therein mentioned, and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints."

FRED. J. BETTS,
Clerk of the Southern District of New-York.

INTRODUCTORY PREFACE.

THE author of the following work has long seen, and with regret, the want of something like a general, systematic treatise upon the different branches appertaining to medicine, on a plan adapted to the peculiar profession of Botanic Physicians; and he has looked anxiously for some one, more competent to the task, to undertake it. But as yet, no work of the nature of the one proposed, even professedly, has appeared, that I am aware of. Many books, indeed, have been written upon botany; but they have chiefly been either a scientific classification of plants, unconnected with their medicinal properties; or, mere fugitive treatises upon the medical qualities and uses of particular plants, which, though very useful as far as they go, were not intended by their authors as a general guide for the practice of physic. Impelled, then, by the necessity of a work, such as is proposed above, the author has attempted in the following pages, to supply it: how far he has succeeded, others will determine. This, however, he can confidently assure the members of the Botanic Profession, that in his hands the treatment of diseases recommended has proved eminently successful; and it would be but a poor compliment to his Botanic Brethren to suppose that in their hands it would not be equally efficacious.

It will not be denied, that the depressed and almost outlawed condition under which Botanic Practitioners have labored in modern times, is in a great measure owing to the deficiency of a substantial, comprehensive and regular sys-

tem of practice which should render them *independent* of any other sect, elevate them to a standard of respectability, and remove all grounds for the imputations of ignorance and incompetency, which are now so lavishly heaped upon them by interested persons. Until such a standard is established, societies formed, and the Botanic Profession *brought up to that standard*, public confidence in them, as a body, cannot be expected.

And I would ask, what should hinder the accomplishment of so desirable an object? Are botanic medicines so intrinsically inefficient, or so deservedly so unpopular, that they should forever be condemned to insignificance? None dare say it. Who has not, in the course of his life, seen astonishing cures performed by the simple virtues of vegetables—even when administered by the humble man of "roots and herbs," when the whole force of minerals has failed? Does any one say that vegetable medicines are less safe than minerals?—Alas! the miserable martyrs to the latter who daily meet our eyes, forbid it. Why then do we grovel in the dust, when the Almighty has put in our possession such ample materials for relieving the sufferings of our fellow beings?—And why are we permitted to render this service only with halters about our necks? Why is it that the Botanic Profession is proscribed in most of the States by legislative restrictions, which, in many of them, amount to absolute tyranny, as unconstitutional, as unjust? If there is a shadow of a cause for such oppression, aside from the insidious misrepresentations of interested persons, it is because Botanic Physicians are not just to themselves. Let them unite—form societies—establish a respectable and intelligent standard of admission, and the favor of the public will soon break their fetters.

If this present work shall in any degree stimulate the members of the Botanic Profession to the attainment of the above objects, or contribute in the least to their permanent establishment—or even furnish an incitement to others more capable of doing justice to the undertaking, I shall be grati-

fied. I have entered upon the undertaking with diffidence, well knowing the difficulties attending it. But as I have had considerable experience in the healing art, duty to society seemed to impel me to communicate it, in the hope that it might possibly be beneficial to the human family, when I can no longer be so; for I should always have esteemed myself a useless member of society had I not contributed my mite, however imperfect, towards the improvement of physic.

In giving the history of diseases, causes, symptoms, &c. I lay no claim to originality:—a correct description of disease being the *same every where*. I have therefore taken them, principally, from different medical works, wherever I have found them agreeing with my ideas, making such alterations as I saw fit. I have also extracted such observations upon diseases as I imagined might be useful, whenever I have found them coinciding with my views. And for these I am chiefly indebted to the estimable BUCHAN, and THOMAS, who, however we may vary in regard to remedies, were generally very correct and plain in their descriptions. In the department of Materia Medica I have likewise derived great benefit from the descriptions of THATCHER, RAFINESQUE, and HENRY, whose works have contributed largely to the developement of the medicinal resources of our country.

This book is written in plain language, in order that the student may come at once at the substance of the study, without being under the necessity of charging his mind with a host of Latin technical terms, which can only serve to confuse and confound him, or, at most, to screen his ignorance. The English language is certainly copious enough to express the whole science: I have, therefore, dispensed with every other, excepting such terms as are common, and it may be convenient to retain.

Above all, I would not be understood as encouraging any person in the practice of physic until he has attained a thorough knowledge of all the branches of it necessary to a correct and intelligent understanding of the subject. But book

knowledge alone cannot do this. Theory, or study merely, never formed a physician ready for the work. With equal propriety, a man might learn any mechanical business by theory: he would find, in either case, on attempting the practical part, that he has his profession yet to learn.—It is *observation* only, under the guidance of some experienced practitioner, that can perfect the physician, and render him practically competent.

Neither would I have the qualifications of the student regulated by the *time* he has spent in study: for some from instinct, or a natural inclination for it, will understand the subject better in one year than others will in their whole lifetime. Therefore, whenever a student can pass the examination of a competent tribunal, satisfactorily, let him be admitted, whether he has studied two or ten years—acquired his knowledge in the chimney corner, or in the college; thereby affording encouragement to industry and enterprise.

It has been a common custom among one class of physicians to denounce all others as "quacks," &c. Indeed, I have frequently been cursed for a quack merely for curing when my accuser has failed. Such accusations, under such circumstances, are quite harmless and ridiculous. Walker's definition of a quack is, "a boastful pretender to arts which he does not understand." Such a person should be despised, learned or unlearned, wherever he may be found—and "by their *fruits* ye shall know them."

It is an invariable maxim with me, in the treatment of all diseases, that *Nature is the chief physician*; hence, all that is required of our art, is to assist her when she languishes, and check her when her efforts are too violent; and to accomplish both these ends by the steps whereby she endeavors to expel the disorder; for nature alone terminates distempers, and works a cure, with the assistance of a few simple medicines, and sometimes even without any medicines at all. Above all, never *force a cure*. It is certain to produce lasting injury, and ruin the constitution. Whereas, by patiently

following the course of nature, the patient is left sound and well.

If any reason were wanting for my preference of vegetable medicines, I would answer, their *safety* and *congeniality*, in comparison with minerals. The effects of vegetable poisons upon the system are temporary—those of mineral poisons, lasting. Mineral poison, mercury in particular, exerts such an all powerful influence upon the system as to supersede every thing else, stilling and silencing both the disease and nature herself together, and often substituting a greater and more grievous disease, which shall weigh upon man through life. Does any one say that there are certain indications in disease which can only be answered by mercury?—He certainly exposes his ignorance. And if there are comparatively harmless substitutes, I would ask, are we justifiable in administering a medicine attended with so much risk of making the patient miserable through life?. Rather, far, let it be said of me, that I will do no hurt, if I can do no good, than thus wantonly to trifle with the welfare of my fellow beings.

Bleeding may be useful in some cases; but the extent to which it is generally carried appears to me to be an extravagant waste of the fountain of life. There are very few disorders in which letting blood *removes the cause;* and where it is practised, recovery is usually much slower. I have therefore recommended it sparingly.

The reader will perceive, that in most of those diseases which may be termed diseases of the blood, or vitiation of the humors, I have recommended, as a general remedyor purificator, a syrup of my own preparation, which I term my "*anti-mercurial syrup*," and which is entirely vegetable. This syrup, I freely acknowledge, is with me a particular favorite; as with it I have been enabled to relieve the sufferings of vast numbers of mankind, and in many cases where the patient had almost given up the use of all medicines in despair. Its benefits are more apparent in long standing chronic cases, as cancer, ulcers, scrofula, and venereal affections; in the last

of which I think I may say with truth, that when properly administered, it is almost infallible. This composition, together with several others, I have secured to me by patents; all of which, except the syrup, I have published in this book.—That, however, upon due reflection, I have resolved to retain to myself, and keep the preparation of it entirely in my own hands; well knowing as I do, from the experience of myself and others, that when a composition of that nature is made public for every one to dabble in, it soon becomes adulterated, and loses its character and usefulness. To preserve it, therefore, genuine and uniform in its quality, which is of the utmost consequence, I shall keep the manufacture of it under my own supervision: intending, however, to afford it to the purchaser by the quantity, on terms that shall make it quite as advantageous as to prepare it himself.

☞ ADVERTISEMENT.—It was the intention of the Author to have had a full suite of Anatomical Engravings annexed to this work, upon its publication: but from the difficulty of procuring them in season, and from considerations of propriety, he has determined to issue them in a separate volume, which will be done at as early a day as the requisite care and accuracy will admit of. When published, those who may have previously purchased books will be entitled to a copy.

June, 1830.

ANATOMY.

ANATOMY is a Science which explains the structure and use of every part of the human body. It is divided into nine parts, namely:

BONES,	NERVES,
LIGAMENTS,	GLANDS,
MUSCLES,	VISCERA,
MUCILAGE SACS,	FLUIDS.
VESSELS,	

DOCTRINE OF THE BONES.

Bones are hard substances composed of phosphate and carbonate of lime, cemented by gelatin, which support and form the stature of the body, defend the bowels, and give adhesion to the muscles. Their substance, in the long bones is compact, in the extremities of these bones spongy; in the interior of the marrow bones, net-like, or latticed. In shape they are various. Long and irregular-shaped bones are divided into a body and extremities, and flat bones into a body and margins. Bones are variously named; some from their situation, as the forehead, nose bone, &c.; others from their shape, as the wedge bone, in the bottom of the skull; some from their use, as the jaw bone. The processes and cavities of the bones are named from their figure, as the tooth-like process, the saucer cavities, &c. An artificial skeleton is when the bones are hung together with a wire, or a natural, when they are kept together by their own ligaments.

TABLE OF THE BONES.

BONES OF THE HEAD.

Bones of the Skull.	Forehead bone,	1
	Side bones,	2
	Occiput, or hinder bone,	1
	Temple bones,	2
	Sieve-like bone,	1
	Wedge-like bone,	1
Bones of the Face.	Upper Jaw bones,	2
	Cheek bones,	2
	Nose bones,	2
	Tear bones,	2
	Palate bones,	2
	Lower Spongy Nose bones,	2
	Plough Share,	1
	Lower Jaw,	1
Teeth.	Front Teeth,	8
	Eye Teeth,	4
	Dog Teeth,	8
	Grinders,	8
	Of Wisdom,	4
	Bone of the Tongue,	1
Bones of the inner ear, within the temple bone.	Hammer,	2
	Anvil,	2
	Stirrups,	2
	Circular bones,	2

BONES OF THE TRUNK.

The back-bone.	Joints.	Neck,	7
		Back,	12
		Loin,	5
	Sacred bone, or rump,		1
	Point of the spine,		1

CHEST.	Breast bone,	1
	Ribs,	24
	Pelvis, or haunch bones,	2

BONES OF THE UPPER EXTREMITIES.

THE HAND.	SHOULDER.	Collar bones,	2
		Shoulder blade,	2
		Arm bones,	2
	THE FORE-ARM.	Fore-arm,	2
		Outer-arm,	2
	WRIST BONES.	Ship bones,	2
		Moon bones,	2
		Wedge-like bones,	2
		Circular bones,	2
		Square bones,	2
		Four-sided bones,	2
		Great bones,	2
		Hook-like bones,	2
		Hand bones,	10
		Finger bones,	28

BONES OF THE LOWER EXTREMITIES.

THE LEG.	The thigh bones,	2
	Knee pans,	2
	Shin bones,	2
	Outer-shin bones,	2
THE FOOT.	Heel bones,	2
	Ancle bones,	2
	Square bones,	2
	Ship-like bones,	2
	Wedge bones,	6
	Bones of the foot,	10
	Toe bones,	28
	Total,	240

The skeleton is divided into head, trunk, and extremities,

OF THE HEAD.

The head is divided into the skull and face.

THE SKULL.

The shape is various according to the customs of different nations, the bones of the infant being so tender as to be moulded into almost any form. It consists of eight bones: one forming the forehead, two forming the top and sides of the head, two forming the temples, one forming the back part of the head, one wedge-shaped in the middle of the base of the skull, and one sieve-shaped, behind the root of the nose.

Upon examining the upper part of a skull externally, several zig-zag lines are perceptible; that which extends across from one temple over to the other is called the crowning suture, and unites the forehead bones to the two which form the top and sides of the head; that which proceeds from behind one ear over across to the other, is the back suture, connecting the hinder bone to the side bones of the head; and the suture extending from the crowning suture to the back suture, is called the arrow-shaped. These are sometimes called the true sutures, to distinguish them from the two spurious sutures, which unite the temple bones to the sides of the head. There are several prominences on the upper part of the skull; two in the forehead bones, one over each eye, one in the middle of each bone forming the sides of the head, and one in the centre of the hinder bone. These eminences point out the centre of ossification in these bones.

On the internal surface of the upper part of the skull are a number of grooves formed by the spinous artery of the outer membrane of the brain. The sutures are here in the form of a line, not dove-tailed, and the whole surface is more polished than the external.

The bones forming the upper part of the skull consist of an external and an internal table, of a compact structure, and a spongy intervening substance.

The internal surface of the base of the skull is divided naturally into eight considerable depressions to suit the lobes of the brain and hinder brain. The two anterior are immediately over the orbits, and are separated from each other by a ridge ascending from the root of the nose. Immediately before this ridge is a small hole, called the blind hole, and on each side a number of perforations which transmit the smelling nerves into the nose, called the sieve-like holes. Passing backwards, there are two round holes near each other, one going to the bottom of each orbit: these are for the passage of the optic nerve, and are called the optic holes. Beyond these holes is a small cavity which will admit the end of the little finger, surrounded by four processes, two of which are anterior, and two posterior; these are termed couch-shaped processes, and the cavity in their centre contains the pituitary gland. Under each anterior couch-shaped process is a considerable fissure, the upper orbi-

tal hole, which transmits to the orbit the third, fourth, the first branch of the fifth, and the sixth pair of nerves, and the opthalmic artery. Beyond this fissure, proceeding backwards, there is a round hole which gives passage for the second branch of the fifth pair of nerves; and the oval hole through which the third branch of the fifth pair of nerves passes. Near the oval hole is the spinous hole through which the spinous artery of the outer membrane of the brain passes. Between the oval hole and the posterior couch-like process, there is a large ragged aperture or canal, which in the fresh subject is partly filled with cartilage, and is the entrance of the carotid or head artery, and the exit of the great nerve for the ribs. A projecting part of the bone next presents itself, called the rocky portion of the temple bone. It has on its posterior surface an oval opening, the internal hearing canal, through which the nerve for the organ of hearing and the nerve of the face enter. Immediately below this is an irregular oval opening, formed by the junction of the bone, forming the back part of the head with the temple bone; this is the hole in the base of the skull. Through the anterior part passes the eighth pair of nerves; and the posterior part transmits the blood from the side canal of the outer membrane of the brain, whose course is marked by a deep groove leading to the hole, into the jugular vein.

The portion of the bone which proceeds backwards from the posterior couch-like process, between the rocky portion of the temple bone, is the wedge-shaped process of the hinder bone of the head; it is somewhat hollowed to receive the oblong part of the brain uniting with the spinal marrow. At the bottom of this process of bone is a considerable opening, called the great hole of the back of the head; it transmits the spinal marrow, the vertebral arteries, and the accessory nerves, and a process of the second vertebræ or bone of the neck, lies in its anterior part. Between this opening and the hole in the base of the skull, is the hole which gives passage to the tongue pair of nerves. Beyond the great hole in the back of the head is a cross-shaped eminence to which processes of the outer membrane of the brain are attached; the horizontal eminence separates the two superior cavities of the back of the head, from the two inferior.

FOREHEAD BONE.

The forehead bone is situated in the anterior part of the skull, forming the forehead and upper part of the orbits. Its shape is like a cockle shell. There are two forehead eminences which mark the centres of ossification; two forehead excrescences which are situated over the two forehead canals; two eye-brow ridges, which give origin to the forehead muscles, and whose extremities are called the angular or orbital processes; an external forehead spine, on which the bones of the nose rest; and an internal forehead spine, to which the outer membrane of the brain adheres; and the two orbitar plates which separate the orbits from the cavity of the skull.

The cavities are: the brain cavity, which contains the front lobes of the brain; a large notch between the orbitar plates for the situation of the perforated plates of the sieve bone; two forehead or pituitary canals within the bone above the root of the nose; two orbital

cavities, in which are two depressions for the situation of the tear gland; a notch in each eye-brow ridge for the cartilaginous pulley of the upper oblique muscle; an eye-brow hole through which passes the forehead artery and nerve; the blind hole, situated below the beginning of the internal forehead spine.

The forehead bone is joined to those two forming the sides of the head by the crown suture; with the two bones of the nose, the two upper jaw bones, and the two tear bones, by what is called the transverse suture; with the wedge bone and sieve bone, by harmony of their parts; and with the cheek bone, by suture.

The use of the forehead bone is to form the forehead pituitary canals, part of the orbits, and to contain and defend the lobes of the brain.

SIDE BONES.

These bones, forming the sides of the skull, are placed, one on each side of the upper part of the skull. They are arched and somewhat four-sided. There is a semi-circular ridge from which the temple muscle originates; and a hole near the arrow suture, which transmits an artery and a vein of the outer membrane of the brain. Upon its internal surface are the grooves of the spinous artery; and where the two bones are united there is a deep cavity extending along the arrow suture, for the longitudinal canal of the outer membrane.

These bones are the most equal and smooth, and are among the thinnest bones of the skull. Their use is to form the superior part of the head.

THE HINDER BONE.

This bone forms the back part of the head, and is of a four-sided, oblong shape. There is an external excrescence in the middle of the bone, to which the cord of the nape of the neck is attached.—Also a transverse spine proceeding from each side of the excrescence to which the four-sided muscle and muscles of the neck are attached; a lesser cross spine, for the insertion of the straight muscles, below the other; a prominent ridge running downwards, from the excrescences in the centre of this bone, and forming, with the above-mentioned ridges, a cross-shaped spine; the wedge-shaped process, situated before the great hole; two processes, shaped like an ancient cup, which are united to the first vertebræ of the neck. There is also an internal cross-shaped spine; the superior branch gives adhesion to the longitudinal canal of the outer membrane of the brain; the two side branches to the side canals; and the lower, to the adhesion of the hinder brain.

The cavities are, the great cavity on the back of the head, through which the spinal marrow proceeds into the spine, and the spinal arteries, and nerves upwards into the brain; two front holes for the passage of the tongue pair of nerves; two back entrances, (which are sometimes wanting,) for the occipital vein to pass into the side canal; two notches, which, with the corresponding notches in the temple bone, form the holes in the base of the skull, for the passage

of the blood from the side canals into the jugular vein, and the exit of the eighth pair of nerves; a large groove leading to the above notches, in which the side canals are placed. The internal surface has also four considerable depressions, formed by the cross-shaped spine; the two upper contain the posterior lobes of the brain, and the two lower, the two lobes of the hinder brain.

This bone is joined to the wedge-shaped bone by the wedge process, in the adult by a bony concretion growing between them; but in youth they are united by an intervening cartilage; with the side and temple-bones by the back suture; and with the first and second vertebræ of the neck by a cartilage.

The hinder bone constitutes the posterior and lower part of the skull; contains the posterior lobes of the brain, the back brain and the oblong marrow; and joins the head to the back bone.

WEDGE-SHAPED BONE.

This bone derives its name from being fixed in the middle of the base of the skull like a wedge, and extends underneath from one temple to the other. Its shape is irregular, being compared to a bat with the wings expanded.

Its external processes are, two large wings, the front part of which forms part of the orbit, the inner surface supports a portion of the middle lobe of the brain, and the whole external surface is covered by the muscle of the temple. Two spinous processes, a marrow point projecting behind the spinous hole. The wedge-shaped spine, upon which the plough-share, or bone separating the nostrils, lies. Two pen-shaped processes, each of which is distinguished into a root and two extended plates or wings; one external, which on its outer surface gives rise to the external pen-shaped muscle, and on its internal surface to the internal pen-shaped muscle; the other internal. Two hook-like processes, one on the end of the internal wing of each pen-like process, over which the tendon of the muscle, called the stretcher of the palate, turns. The internal processes are, two smaller wings which form the upper part of the superior orbital fissures; four couch-shaped processes, two front and two back.

The external cavities are, the wedge-shaped pituitary canal, which is in the middle of the bone, has a communication with the nostrils, and is divided by an intermediate partition. Two pen-shaped depressions, one between each greater and lesser wing, for the reception of a part of the palate bone. Two holes, each leading to a canal in the root of the pen-shaped process, through which the recurrent branch of the fifth pair of nerves passes into the skull. The internal cavities are, the cavity containing the pituitary or nose gland; the two optic holes; two grooves, one on each side of the pituitary gland, formed by the pulsation of the head arteries; two upper orbital holes, between each greater and lesser wing, through which the third, fourth, first branch of the fifth, and the sixth pair of nerves, and the eye artery, pass out of the skull; two round holes for the passage of the second branch of the fifth pair of nerves; two oval holes for the third branch of the fifth pair of nerves.

The wedge-shaped bone is connected with all the bones of the skull by harmony; it is also united to the two cheek bones, the two upper jaw bones, and the palate-bones, by agreement; and to the plough-share, by being, as it were, nailed to it. It forms the base of the skull, helps to form the orbits, the pituitary canal of the nose, the temples, &c., and it contains the middle lobes of the brain.

TEMPLE BONES.

These are placed at the sides and lower part of the skull; in shape, they are irregular, and they are divided into a spurious portion, which forms the spinous suture, and a stony portion, which is very irregular, and is situated at the base of the skull.

Its processes are, the yoking process, which, with a process of the cheek bone, forms the yoke or arch of the temples, under which the temple-muscle moves, and which gives rise to several muscles of the face, as the chewing and joining muscle; the breast-like process, which projects from under each ear, in the front part of which the muscle to move the head forwards is inserted, and into its back part, the muscles which move the head obliquely backwards; the pencil-shaped process, which is long and narrow, gives origin to a ligament of the bone of the tongue, also to muscles of the tongue and throat; the sheath-like process, which surrounds the root of the pencil-process; and the hearing process, or outer bony circle of the hearing passage, to which the membranes of the brain and the cartilage of the ear are affixed.

The cavities are, the external hearing canal, which leads to the cavity of the ear; the internal hearing canal, which begins on the back part of the internal surface of the stony portions, and transmits the seventh pair of nerves: it has immediately within it the internal opening of the aqueduct of Fallopius.

Each temple bone is joined to the side bones by the spurious suture; with the wedge-shaped, and the cheek bones by harmony; and with the lower jaw by its excrescences fitting in the depressions of the jaw. The use of these bones is to contain the middle lobes of the brain, and the organ of hearing; and to concur in forming the the temples and base of the skull.

SIEVE-SHAPED BONE.

Is situated in the fore part of the base of the skull, above the root of the nose, and between the orbits. Its shape is that of a cube, or square.

Its processes are, a sieve-like plate which lies horizontally above the root of the nose, within the cavity of the skull. It is every where perforated by a number of small holes, through which the smelling nerves pass into the nose. The cock's crest, a process which proceeds upwards from the middle of the sieve-bone, and has attached to it the scythe process of the outer membrane of the brain. Two flat circular bones, which are very smooth externally, and form the inner sides of the orbits. The sieve partition, nose plate, and perpendicular plates, are also considerable processes, de-

scending directly under the cock's crest into the cavity of the nose, and forming, with the plough-share, the nose partition. Two hollow substances, which are curled like a piece of parchment, one on each side of the partition, called the upper spongy bones. There are a number of small holes on each side of the cock's crest; two circular holes of the nose, one situated between the forehead bone and the circular plate of the sieve bone, for the passage of the nasal branch of the orbital nerve; a number of cells which compose the internal parts of the bone, and form the pituitary canals of the sieve bone.

This bone is connected with the forehead bone, and the nose bones, the two upper jaw bones, the two palate, the wedge-shaped, and the plough-share bones, by harmony. Its use is to form an extensive surface for the organ of smell, to constitute part of the nose, orbits, and skull.

OF THE FACE.

The bones of the face are fourteen in number, and are divided into those of the upper and lower jaw.

The upper jaw is formed of thirteen bones, viz. two upper jaw, two nose, two palate, two cheek, two lower spongy, and two tear bones, and the plough-share, or separating bone of the nose, which are all united to the skull and to one another, by harmony. The lower jaw is one bone.

There is an obvious line beginning at the external angle of the orbit, where the forehead bone is joined to the cheek bone, which leads to the inferior opening of the orbit, proceeds upwards to the nose, whose root it crosses, and then traverses the other orbit to the external angle: this is the transverse suture. The other harmonies of the face are called after the bones they unite.

UPPER JAW BONES.

These bones are situated in the front and middle part of the face. Their shape is irregular.

The processes are, the nose process, which forms the sides of the nose; the orbitar process, or plate, which forms part of the orbit; the process in which the teeth are placed; the palate process, which forms the palate; and a spine, formed by the junction of the palate bones, on which the plough-share rests.

Its cavities are, the jaw cave, and the jaw pituitary canal, in the body of the bone, between the orbital and palate processes; it opens into the nostrils. The lower orbital canal, which opens under the margin of the orbit, and transmits the orbital nerve. The tear depressions, situated in the upper internal part of the nose process, for the reception of the tear-bag; it leads to the nasal canal which conveys the tears into the nostrils. The back palate-hole, near the back tooth, on the inside, for the passage of the tooth nerve. A notch in the front part of the palate process, which, with a corresponding notch in the other upper jaw bone, forms the old palate-hole, which transmits the front palate nerve and artery.

Each upper jaw bone is connected with its fellow, with the forehead bone, one nose bone, one tear bone, the sieve, the wedge, one cheek bone, one palate bone, and one lower spongy bone, by harmony, and with the plough-share, and the teeth by their being nailed as it were, to it. The use of these bones is to form part of the face, palate, nose, nostrils, and orbits, and also to afford a convenient situation for the organ of chewing.

THE CHEEK BONES.

These bones are situated at the sides of the face. In shape they are almost square. The processes are, the upper orbitary process which forms part of the orbit and the sharp edge of the temple bone; the lower orbitary process opposite the former, and in part constituting the bottom of the orbit and the edge of the cheek; the internal orbitary process, which also forms part of the orbit; the jaw process by which it is joined to the upper jaw; the yoke process, by which it is joined to the temporal bone, to form the arch.

This bone is united to the forehead, upper-jaw, sieve and temple bones. Its use is to assist in forming the face and orbits.

NOSE BONES.

These are situated in the upper and middle part of the nose. In shape, they are a long square; in substance, compact. Their use is to form the external part of the nose. Each bone is connected with its fellow, and the upper jaw, by agreement, with the forehead and sieve bone, by the transverse suture.

TEAR BONES.

These bones are situated in the internal angle of the orbit of the eye. They are like the nail of the finger in shape. There is a cavity which contains the tear-bag. Each bone is connected with the upper-jaw, forehead, sieve, and lower spongy bones, by agreement.

LOWER SPONGY BONES,

Are situated in the side and lower part of the nostrils. Figure. spiral and convoluted. Each bone is united to the upper jaw, palate, tear, and sieve bones.

PALATE BONES.

These bones are placed in the back part of the nose, from which they ascend sidewise to the orbits. In shape, they are irregular.—They are divided into palate, pen-shaped, nose, and orbital portions. The palate plate, which forms the back part of the roof of the mouth; the pen-shaped process is situated behind the last grinder; the nose process arises perpendicularly from the palate, and covers part of the jaw cave; the orbitar process, situated in the orbit. The cavities are the palate cells which communicate with, and form part of the

wedge cells. Its use is to form the back part of the palate, and part of the nose and orbit. Each bone is connected with its fellow, with the upper jaw, wedge, sieve, lower spongy, and plough-share bones, by harmony.

THE PLOUGH-SHARE,

Is situated in the middle cavity of the nostrils, which it divides into two parts. In shape it resembles a plough-share. Its use, to sustain and divide the cavity of the nostrils. Above, it is united with the wedge bone, by being nailed, as it were, to it, and with the sieve bone, by harmony; below, it is connected to the upper jaw and palate bones, by agreement, and is united to the cartilaginous division of the nose.

THE LOWER JAW BONE,

Is situated in the lower and front part of the face. Its figure is like a horse shoe. There are two jointed processes which are received into the jointed cavities of the temple bones; two crow's bill processes, which are sharp pointed, and give adhesion to the temple muscles. The process in which the teeth are fixed; the union of the under jaw bones in the centre of the chin; the lower edge, whose ends form the angles of the jaw.

The cavities are, the half moon notch between each crow's bill and jointed process; the hinder jaw holes, one above each angle, on the inner surface of the jaw, which transmit the lower jaw nerve and artery into a canal called the mental canal, which conducts the same artery and nerve to the front jaw holes upon the external surface of the bones, one on each side of the chin, from whence the artery and nerve again emerge upon the chin.

Its use is to form a socket for the teeth; to constitute the lower segment of the cavity of the mouth, and to afford a point of adhesion to the muscles of the throat, neck, and tongue. It is connected with the temple bones, by a hinge joint, with the teeth by enclosure, and with the bone of the tongue and other parts, by muscles.

PARTICULAR CAVITIES OF THE FACE.

The Orbits—Situated under the forehead, at the root of the nose. Their shape is half of a hollow ball. The cavities are, a depression for the tear gland; a notch of the orbital cartilaginous pulley; a depression for the tear-bag; the nasal canal for the passage of the tears into the nose; an upper and lower orbital fissure; the eyebrow hole; the lower orbital canal; the nasal hole, and the hole for the sight nerve. It is composed of seven bones: the forehead, jaw, cheek, tear, sieve, palate, and wedge bones. It contains and defends the eye and its adjacent parts.

Cavities of the Nostrils.—These cavities are under the front part of the skull, in the middle of the face; they are of a pyramidal figure. The prominences are, the nose partition, the cavernous substance of the sieve bone, and the lower spongy bones. There are three pair of pituitary canals, viz. the forehead, wedge and jaw; the caverns of the sieve bone labyrinth; the front holes of the nostrils; the na-

sal canal; the wedge palate holes, and the front palate hole. Use, to form the organ of smelling, and the pituitary canals, and to serve for speech and breathing.

Cavity of the Mouth.—Its shape, situation and use, are well known.

The Teeth—Are situated in the sockets of the jaws. They are commonly thirty-two in number, sixteen in each jaw. They are divided into four kinds: the cutting, or front teeth, four in each jaw; one eye tooth on each side of the front teeth; and next to them two dog teeth on each side; and last, the grinders or double teeth. Each tooth is divided into a crown, neck and root. The substance of the root and internal part of the crown is compact; the external surface is white and hard, and is called the enamel. Their use is for mastication and the pronunciation of the dental syllables.

Cavity of the top of the Throat.—This is situated under the base of the skull, within the upper bodies of the joints of the neck and back part of the nostrils. Its shape is square at the top. It is composed of ten bones, viz. the hinder bone of the head, two palate, the plough-share, the three first joints of the neck, the tongue bone, and the two temple bones. Its use is for the situation of the top of the throat, upper end of the windpipe, and gullet, and bone of the tongue.

Bone of the Tongue—Situated in the back part of the throat, between the base of the tongue and the top of the windpipe. In shape, it resembles a half moon. There are two larger horns and two lesser horns. It serves for the adhesion of the tongue, for swallowing, and for a point of adhesion to many muscles. It is connected with the pencil process of the temple bones, the lower jaw, shoulder-blade, and breast bone, by various muscles.

Cavity of Hearing—Situated internally in the rocky portion of each temple bone. It is divided into the external hearing canal, cavity of the drum, labyrinth, and internal hearing canal. In the cavity of the drum, are: the orifice of the Eustachian tube, the breast-shaped canal, the oval window, the round window, and the little hearing bones. The labyrinth consists of the shell, court, and semi-circular canals. The shell has a base, top, nucleus, court, ladder, and a spiral plate. The court has an oval hole and the orifices of the semi-circular canals. The cavity of hearing is the organ in which hearing is performed.

The Little Hearing Bones—Are placed in the cavity of the drum. In number, they are four; the hammer, the anvil, the stirrup, and the round bone. In substance, they are compact. Use, for hearing.

OF THE TRUNK.

The trunk of the skeleton is divided into the spine, chest, loins, and pelvis, or basin.

SPINE.

A long column, or pillar, which extends from the head to the sacred bone. It is composed of twenty-four bones called vertebræ, or joints, viz. seven of the neck, twelve of the back, and five of the

loins. Each joint is divided into a body and seven processes, viz. the spinous, two upper slanting, two lower slanting, and four cross processes. Cavities: the spinal canal, and the side holes of the joints. The first bone of the spine is connected with the hinder bone of the skull by a hinge joint; the second joint is united to the first with a motion like a wheel on its axis. The bodies of the vertebræ are connected with one another by a peculiar intervening cartilaginous substance; and on their back parts by a yellow elastic ligament, and by their oblique processes. It supports the head and trunk, and contains and defends the spinal marrow.

Neck Joints.—The first joint is called the atlas. It has no body or spinous processes, but forms an arch, which on the front part surrounds the tooth-like process of the second joint. Instead of upper slanting processes, there are two canals. The second joint is called the toothed. There is a tooth-shaped process at the upper part of its body. All the transverse processes of the remaining neck joints have a peculiar hole for the passage of the vertebral arteries.

Back Joints.—The peculiarities of the vertebræ of the back are, a depression at the sides of the bodies, and a superficial one in the points of the transverse processes, for the attachment of the great and small heads of the ribs.

The Loin Joints—Are much larger than those of the back, and the transverse processes have no depressions.

OF THE CHEST.

The chest is composed of twelve back joints, twenty-four ribs, and the breast bone.

RIBS.

The ribs are placed obliquely from the back joints to the breast bone; twelve on each side. They are divided into seven true, which are uppermost, and five spurious. Eminences: the great head which is connected to the bodies of the vertebræ; the neck; the lesser head, which is joined to the cross processes of the vertebræ; and the the angle of the rib. The cavities are, a longitudinal groove on the inside for the artery of the ribs. The front part of the ribs is cartilaginous, the rest bony and compact. They are connected in front with the breast bone, and behind with the bodies and transverse processes of the spine. Its use is to form the chest, to serve for breathing, to defend the vital intestines, and to give adhesion to the muscles.

BREAST BONE.

This bone is situated in the front part of the chest, between the true ribs. Its cavities are the jugular canal, at the upper and inner part; two collar bone canals, for the adhesion of the collar bones: and seven rib depressions to which the ribs adhere. Its substance is somewhat spongy. Its use is to form the chest, and give adhesion to the separating membrane of the chest.

OF THE LOINS.

The bones of the loins are the five loin vertebræ.

OF THE PELVIS, OR BASIN.

This is situated in the lower region of the trunk. Its figure is somewhat like a basin. It is composed of four bones, viz. two haunch bones, one sacrum or sacred bone, and the point bone at the lower end of the sacrum. Its use is to contain the organs of generation, the bladder, straight intestine, and support of the spine.

HAUNCH BONES.

These bones are situated at the sides of the basin. Their shape is irregular. Each bone is divided into three portions, viz. the haunch bone, the hip bone, and the share bone, or pubis. The eminences are, the crest of the uppermost part from which the transverse and slanting muscles of the abdomen arise; at its back part are two spinous processes, which gives adhesion to ligaments; at its fore part are also two spinous processes; the upper gives adhesion to the muscle, enabling persons to cross their legs, the stretcher of the sheath of the thigh, and the ligament of the thigh; the lower front spinous process, about an inch from the former, has, arising from it, the straightener of the thigh. The outer surface of the haunch bone is covered with the buttock muscles; the internal by the internal muscles. Upon the internal surface there is a line even with the pubis; this is the rim of the basin; it divides the cavity of the abdomen from the pelvis. Upon the lower portion of this bone are, the bump upon which we sit; the spinous process of the hip, which projects backwards, and gives adhesion to the uppermost ligament, connecting the haunch bone to the sacrum; and the branch of the hip, which joins the share bone. Upon the share bone are, the body, near the socket, the angles and arches of the pubis. The cavities are, a notch between the front spines of the haunch; a front and back notch in the hip; the socket which receives the head of the thigh bone; and the oval hole. Each haunch bone is connected with its fellow in front by ossification; with the sacred bone by strong ligaments and cartilages; and with the head of the thigh bone by ball and socket.

THE SACRED BONE.

This bone is placed in the back part of the basin. Its shape is triangular, bent forward. The eminences are, two upper oblique processes; appearances of the spinous processes; appearances of the oblique and cross processes; and the appearances of the joints of the back bone. The cavities are, four pair of outer, and four pair of internal holes, and five canals lengthwise. Its use is to constitute the basin, and sustain the spine.

THE POINT BONE.

This small bone forms the tip, or lower end of the sacred bone. Its use is to sustain the rectum, or straight gut, and prevent rupture of the soft parts in delivery.

OF THE UPPER EXTREMITIES.

The bones of the upper extremities, are, on each side, the collar bone, the shoulder-blade, the upper-arm, the two fore-arm bones, bones of the wrist, hand, and fingers.

COLLAR BONE.

This bone is placed slanting on the upper and side parts of the chest. Its shape is similar to the letter *f*. There is a groove on its under side, for the reception of the under collar bone arteries. Its use is, to connect the shoulder-blade and upper-arm bone to the chest, and to defend the collar bone vessels. In front it is jointed to the breast bone, and behind to the shoulder-blade, by its head fitting in a cavity.

SHOULDER-BLADE.

This is placed in the upper and side parts of the back; its shape triangular. Its eminences are, the spine, which is in the middle of the outer surface; its front termination is called its extremity; the crow's bill process, which stands out opposite to the extremity; the borders of the bone are called ribs, and the corners, angles; the circle below the joint cavity is called the neck. Its cavity is, the joint cavity which receives the head of the arm bone. The shoulder-blade is connected with the ribs, and bone of the tongue, by muscles, and with the arm bone, by ball and socket. It defends the back, sustains the arm, and forms the joint of the arm bone.

UPPER ARM-BONE,

Is situated between the shoulder-blade and fore-arm. Eminences: the head which is rounded on its upper part; the neck which is immediately below the head; the great eminence near the neck, which receives the upper spine muscles; and the lesser eminence, which has affixed to it the under muscle of the shoulder-blade. On the lower end are three eminences, namely, an outer and an inner, which give origin to the bending and extending muscles of the arm, and the pulley of the arm bone. There is a furrow between the eminences, for a long tendon: in the back part of the lower end, a depression for the process of the outer arm bone; and a front depression for the crow process. It constitutes the arm.

THE FORE-ARM BONE.

This bone is situated in the inside of the fore-arm towards the

little finger. Its figure is long, and thicker above than below.—There is the elbow process on which we lean ; and the crow process opposite to it. In the lower extremities are the lower head and neck, and the pencil process, which gives strong adhesion to the ligament which secures the wrist. Its use, to constitute the chief support of the fore-arm. It is connected with the pulley of the upper arm, by its round head fitting into the corresponding cavity; and with the outer-arm bone by its rotating round it.

OUTER ARM BONE.

Situated in the external side of the fore-arm, towards the thumb. In shape, it is long. The eminences are, the upper head which is excavated; the little head and the pencil shaped process of the lower end. Its cavity, the joint cavity. It assists in forming the fore-arm, and serves for bending, and turning the arm. It is connected to the upper-arm by a hinge joint; to the fore-arm bone by an intervening ligament; and with the wrist by ball and socket.

WRIST.

The wrist is composed of eight bones, which lie close to each other in a double row, between the fore-arm and the hand. It is divided into two rows, the upper and lower. In the upper row, (from the thumb to the little finger,) are the ship bone, the moon bone, wedge, and round bone. In the lower row, the two square bones, the great bone, and the hook bone.

BONES OF THE HAND.

Situated between the wrist and fingers. Composed of five longitudinal bones: one of the thumb, and four of the fingers. These bones form the hand.

FINGERS.

Are situated at the lower extremity of the hand. They are composed of a thumb and four fingers. The thumb has two bones, and each finger three. They form the fingers, which are the instruments of touch, defence, and labor.

OF THE LOWER EXTREMITIES.

The bones of the lower extremities are, the thigh, knee-pan, shin bone, outer-shin bone, the bones of the foot, heel and toes.

THE THIGH.

Is situated between the basin, and the knee. The eminences are. the head, which is received into the socket of the hip, and has a small

dimple in the middle for the attachment of the round cord; the neck on which the head stands is rough, and gives attachment to the cap ligament; the great projection below the neck, for the insertion of buttock muscles; and the little projection, which receives the loin muscle, and internal muscles; and a rough line on the body of the bone.

On the lower extremity are, the external and internal rounded eminences, and between them, behind, a deep notch for the passage of the great artery, vein, and nerve of the leg. Its use is obvious. Its substance is compact on the outside, spongy in the extremities, and latticed internally.

SHIN BONE.

Situated in the inner side of the leg, between the knee and the foot, and is long, thick and triangular. The eminences are, its upper head; the spine of the shin bone, to which the great ligament of the knee-pan is fixed; and the lower head, which forms the inner ancle. The cavities are, two joint canals, in the upper head, for the reception of the double head of the thigh bone; and the joint cavity at the side of the head, for the reception of the outer-shin bone. Its use is to support the leg, and serve for the bending of the lower extremity. This bone is connected to the thigh bone and knee-pan by hinge, to the outer-shin bone by intervening muscles, and to the ancle bone by ball and socket.

THE OUTER-SHIN BONE,

Is situated in the outer part of the leg, by the side of the shin bone. It is small, long and irregular in shape. The eminences are, the head of the upper end, and the outer ancle at the lower end. It is connected by a long ligament to the shin, and by its heads and cavities fitting. It forms a fulcrum for the shin bone, and helps to form the leg.

KNEE-PAN.

This flat bone covers the fore part of the knee joint, and is placed between the eminences of the thigh, and above the shin bone. Its shape resembles the common figure of a heart, with the point downwards. It is connected to the thigh bone by hinge, and to the shin bone by strong ligaments. Its use is to strengthen the knee joint, and to serve as a common pulley for the extending muscles of the leg.

BONES OF THE INSTEP.

These bones are placed between the leg and long bones of the foot, are seven in number, and in a double row, forming the ancle. In the first row are the ancle bone and heel bone; and in the second row are the ship bone, the square bone, and three wedge bones, which are placed close to one another. The eminences are the head of the ancle bone and the protuberance of the heel. Their use is to form the base of the foot, and serve for its motion.

BONES OF THE FOOT.

These are the long bones between the instep and toes, forming the back of the sole of the foot. They are five in number.

TOES.

The great toe is composed of two small bones; each toe of three small bones.

THE BONE MEMBRANE. (*Periosteum.*)

This is a membrane which invests the external and internal surface of all the bones, the crowns of the teeth excepted. Its substance is fibrous, furnished with arteries, veins, nerves, and absorbent vessels. Its use is to distribute the vessels on the outer and inner surface of bones.

CARTILAGES.

Cartilages are white, elastic, glistening substances, growing to the bones. They are divided into those which cover jointed surfaces of bones; those between the joints, which are not fastened to the bones, but adhere to the cap ligaments, and lie between the joints, as in the knee joint, &c.; and those which unite bones firmly together, as the bodies of the vertebræ, &c. Their use is to lubricate the articulation of the cartilages; to connect some bones by an immovable connexion; and to facilitate the motion of some joints.

FORMATION AND GROWTH OF BONES.

Ossification, or the formation of the bone, is a specific action of small arteries, by which the bony matter is separated from the blood, and deposited where it is required.

The first thing observable in the embryo (the child in the womb before the fifth month, afterwards is called fœtus,) when bone is to be formed, is a transparent jelly, which becomes gradually firmer, and is formed into cartilage. This gradually increases to a certain size, and when ossification (bone making) commences, vanishes as it advances. Cartilages, before ossific action, are solid, without any cavity, but when the ossific action of the arteries is about to commence, the absorbents become very active, and form a small cavity in which the bony matter is deposited; bone continues to be separated, and the absorbents model the mass into its required shape.

The process of ossification is extremely rapid in the womb; it advances slowly after birth, and is not completed in the human body till about the twentieth year.

Ossification of the flat bones, as those of the skull, always begin from the central points, and the radiated fibres meet the rays of other ossifying points, or the edges of the adjoining bones.

In long bones, as those of the arm and leg, a central ring is formed in the body of the bone, the head and extremities being cartilage, in the centre of which the formation of bone afterwards begins.—The central ring of the body shoots its long fibres towards the head and extremities, which extend towards the body of the bone. The head and extremities at length come so close to the body as to be merely separated by a cartilage, which becomes gradually thinner until the twentieth year.

Thick and round bones, as those of the ancle, wrists, breast and knee-pan, are at first all cartilage; ossification begins in the centre of each.

At birth, the bones of the child are very imperfect. The extremities and processes of almost all the long bones are connected with the body of the bone by cartilage. The skull has no sutures; its bones are connected together by a firm and almost cartilaginous membrane. On the fore part of the skull, between the side bones and the forehead bone, is a considerable membranous space; and a similar but smaller one between the side bones and the hinder bone of the head. The forehead consists of two bones, and the hinder bone of four. The teeth are partly formed, especially the enamel, and are placed in a double row. The outer ear-hole is surrounded by a bony circle, in which there is a groove for the attachment of the membrane of the drum; this circle gradually elongates into the hearing canal. The joint cavities in all the bones are much shallower than in the adult.

The haunch consists of three bones, which are connected together by very firm cartilage, as also the bodies of the spine and its processes.

CONNEXION OF BONES.

Bones are connected with each other, so as to admit of motion; or, so as to admit of no motion; or, with an intervening substance between them. There are several species of each of these.

The different species of the moveable connexion, are: the ball and socket, where the round head of one bone is received into the deep cavity of another, so as to admit of motion in every direction, as the thigh bone with the hip. The second species is when the round head of one bone is received into a superficial cavity of another, so as to admit of motion in every direction, as the head of the arm. The third is the hinge joint, which admits only of opening and shutting, or extension and flexion, as the knee-joint. The fourth, is where one bone rotates upon another, as the second neck joint, and the outer-arm upon the fore-arm. The fifth and last is, where there is motion, but that very obscure, as the long bones of the hand and foot.

The species of the immoveable connexion are three; first, when the union is by means of tooth-like, or dove-tailed processes, as in the bones of the skull; or, second, by agreement, where the connexion is by rough margins, not tooth-like; as the bones of the face. Third, when one bone is fixed to another like a nail in a board, as the teeth in the jaws.

The species of the intermediate connexion are five : first, where one bone is united to another by a cartilage, as the joints of the back bone. Second, when a bone is connected to another by a muscle ; as the breast bone with the tongue bone. Third, when a bone is united to another by a membrane, as the bones of the head of the child in the womb. Fourth, where a bone in connected to another by a ligament, as the two arm bones. And fifth, where two bones are united one to another by bony matter.

OF THE LIGAMENTS.

Ligaments are strong elastic membranes, connecting the extremities of the moveable bones. They are divided into cap ligaments, which surround joints like a bag ; and connecting ligaments. Use : The cap ligaments connect the extremities of the moveable bones, and prevent the escape of the lubricating mucus, or joint water. The external and internal connecting ligaments strengthen the extremities of the moveable bones.

Ligaments of the Lower Jaw.—The eminences of the lower jaw are connected with the joint cavities of the temple bone, by the cap and side ligaments.

Ligaments of the Back of the Head and Neck.—The joint eminences of the hinder bone are united with the corresponding joint depressions of the first vertebræ, by the cap, broad, front, and back ligaments, the ligaments of the tooth-like process of the second vertebræ, and the ligament of the nape of the neck.

Ligaments of the Vertebræ, or Joints of the Spine.—These joints are connected together by means of the bodies and slanting processes ; the bodies by a soft cartilaginous substance, and the processes by ligaments, viz., the cross ligament of the first joint, the front and back common ligament ; the ligaments between the spine, between the cross, and between the joint ; the cap ligaments of the oblique, or slanting processes ; and the ligaments of the last vertebræ of the loins with the sacred bone.

Ligaments of the Ribs.—The hinder extremity of the ribs is united to the joints of the back bone ; the front with the breast bone. The ligaments of the back extremity are, the cap ligaments of the greater and lesser heads ; the outer and inner ligaments of the neck of the ribs ; and a ligament peculiar to the last rib. The ligaments of the front extremity, are, the cap ligament of the cartilages of the true ribs, and the ligaments of the ribs among themselves.

Ligaments of the Breast Bone.—The ligaments connecting the three portions of the breast bone to the ribs, are, the proper membranes of the bone, and the ligaments of the sword-like cartilage.

Ligaments of the Basin.—The ligaments which connect the bones of the pelvis, or basin with the sacred bone, are, three upper sacred ligaments, two lower sacred ligaments, two cross ligaments of the pelvis, the guarding ligament of the oval-hole, and Poupart's ligament.

Ligaments of the Point Bone.—The base of the point is connected to the apex of the sacred bone, by cap, and other ligaments.

Ligaments of the Collar Bone.—The front extremity is connected with the breast bone and first rib; and the end at the shoulder is connected with the extremity of the shoulder-blade, by the intervening ligament, the cap ligament, and the raising ligament of the shoulder-blade.

Ligaments of the Shoulder-Blade.—The proper ligaments which connect the shoulder-blade to the back extremity of the collar bone, are the conical and square ligaments.

Ligaments of the Arm Bone.—The head of the arm bone is connected with the joint cavity of the shoulder-blade by the cap ligament.

Ligaments of the Elbow Joint.—The elbow joint is formed by the lower extremity of the arm-bone, and the upper end of the fore-arm and outer-arm. The ligaments connecting these bones, are, the cap, and the connecting ligaments between the arm and fore-arm, and the arm and outer-arm

Ligaments of the Outer-Arm.—The outer-arm is affixed to the arm bone, the fore-arm, and wrist, by the upper, lower, oblique, and bony ligaments.

Ligaments of the Wrist.—The ligaments which connect the bones of the wrist together, and with the fore-arm and hand, are the cap ligament of the wrist; the first and second cross ligaments; the slanting ligament, and the cap ligament, proper to the bones of the wrist

Ligaments of the Hand.—The bones of the hand are in part connected with the second row of bones in the wrist, and in part together by the joint and bony connecting ligament.

Ligaments of the Fingers.—The finger bones are connected together and with the hand, and the thumb with the wrist, by the side ligaments of the fingers, and the ligament of the thumb with the square bone of the wrist.

Ligaments which keep the Tendons of the Muscles of the Hand in their place.—These are situated partly in the palm, and partly on the back of the hand In the back of the hand are, the external cross ligament of the wrist, the sheath, and the transverse ligaments of the extending tendons In the palm of the hand, are, the internal cross ligament of the wrist; the sheath-like ligaments of the bending tendons of the finger bones, and their helping ligaments.

Ligaments of the Hip Joint.—The head of the thigh bone is strongly affixed to the socket of the hip bone by two very strong ligaments, the cap ligament, and the restraining ligament in the head and socket.

Ligaments of the Knee Joint.—This joint is formed by the eminences of the thigh bone, the head of the shin bone, and the knee-pan. The ligaments are, the cap, the outer and inner side ligaments; the cross and wing-shaped ligaments, ligaments of the half moon cartilage, and of the knee-pan.

Ligaments of the Outer-Shin Bone.—This bone is connected with the shin bone by means of the cap ligament of the upper end, the bony ligament between, and the ligament of the lower extremity.

Ligaments of the Bones of the Instep.—The lower extremities of the bones of the leg form a cavity in which the ancle bone is re-

ceived. This joint is made by the front, middle, and back ligament of the outer-shin bone, the three-cornered ligament, the cap, and the ligaments proper to the bones of the instep.

Ligaments of the Long Bones of the Foot.—These bones are connected partly together, and partly with the former bones, by the cap ligament, the joint ligaments, the cross ligaments in the back and sole of the foot, and the bony ligaments between them.

Ligaments of the Toes.—The bones of the toes are united partly together, and partly with the long bones by the cap and side ligaments.

Ligaments which keep the Tendons of the Muscles of the Foot in their proper place.—These ligaments are found partly in the back, and partly in the sole of the foot. They are the sheath ligament of the shin bone, the cross ligaments of the ancle, the ligaments of the muscle that moves the foot outwards, the jagged ligament, the sheath ligament of the extending muscle and flexor of the great toe, the sheath-like and helping ligaments of the flexor tendons, and the cross ligaments of the extending tendons.

OF THE MUSCLES.

A MUSCLE is a fibrous body divided into head, belly, and tail. The head and tail are firmly attached to the bones; the place of attachment of the former is called its *origin*, and it is usually the part nearest the trunk of the body; the latter is termed the *insertion*, which is more remote from the trunk, and is implanted in the part which is to be moved. The body adheres loosely to the other parts by means of the cellular membrane, in order that it may swell when the muscle acts. Its substance is fleshy in the belly, and tendinous in the extremities; the former is composed of fleshy fibres, which are irritable and sensible; the latter of white fibres, neither irritable nor sensible. When the tendinous extremity of a muscle is rounded, it is called a tendon; when broad and expanded, a flat tendon.

Muscles are variously named, according to the arrangement of their fibres; or from their action; or from their origin and insertion; or from their figure or situation; thus, when the fibres go in the same direction it is said to be a simple muscle; when they are in rays, a radiated muscle; where they are like a feather, a feather muscle; and where two feather muscles are attached, a compound feather muscle. Muscles sometimes surround certain cavities of the body, forming a thin sheet, as the intestinal canal, bladder, &c.—They are sometimes placed round openings so as to shut or open them. Many are named from their action, as the benders or flexors, extenders, raisers, &c. Those which receive names from their origin and insertion, are very numerous as the pencil-shaped, &c. The triangular, comb and pyramid muscles, are named from their shape; and the temple, breast, tongue, &c., muscles, from their situation. Those which act together are called relations; but those

that act contrarily, antagonists. Arteries, viens, and absorbents abound in the fleshy parts, but there are very few in the tendons. Nerves are also numerous in the fleshy parts, but wanting in the tendons. Muscles are the organs of motion.

MUSCLES OF THE INTEGUMENTS OF THE SKULL.

Occipital Forehead Muscle—Arises from the upper ridge of the hinder bone; its expansion covers the upper part of the head; inserted into the skin of the eyebrow and root of the nose; use, to pull the head backwards, and raise the eyebrows and skin of the forehead.

Brow Wrinkler—Arises above the root of the nose; inserted into the inner part of the occipital forehead; use, to wrinkle the brows.

MUSCLES OF THE EYELIDS.

Circular Eyelid—Arises around the edge of the orbit; inserted into the inner corner of the eyes; use, to shut the eye.

Raiser of the upper Eyelid—Arises from the bottom of the orbit, near the optic hole; inserted into the cartilage of the palm of the upper eyelid; use, to open the eye by raising the upper lid.

MUSCLES OF THE EYEBALL.

The upper, lower, inner, and outer Straight Muscles—Arise from around the optic hole of the wedge bone at the bottom of the orbit; inserted into the front part of the outer membrane of the eyeball, opposite each other; use, to move the eyeball upwards, downwards. inwards, and outwaids.

Upper Slanting, or Pulley—Arises near the optic hole, and passes through a pulley, in the internal corner of the eye; inserted into the back part of the bulb, between the straight and the entrance of the optic nerve; use, to roll the eye, and turn the pupil outward and downward.

Lower Slanting—Arises from the nose canal, and is inserted opposite the former; use, to roll the eye.

MUSCLES OF THE NOSE AND MOUTH.

Raiser of the Upper Lip and Wing of the Nose—Arises from the nose process, of the upper jaw bone; inserted into the upper lip and wing of the nose; use, to raise the upper lip and dilate the nostrils.

Proper Raiser of the Upper Lip—Arises from the upper jaw under the orbit; inserted into the middle of the upper lip; use, to pull the upper lip directly upwards.

Raiser of the Angle of the Mouth—Arises from the orbitar hole of the cheek bone; inserted into the circular hole at the corner of the mouth; use, to raise the corner of the mouth.

Larger Cheek Muscle—Arises from the cheek bone, and runs downwards; inserted into the angle of the mouth, with the depressor of the lip; use, to inflate the cheek and raise the corner of the mouth.

Smaller Cheek Muscle—Arises above the larger cheek muscle; inserted into the angle of the mouth; use, to raise the corner of the mouth outwards.

Compressor of the Cheek—Arises from the socket of the last grinders and the crow process of the jaw; inserted into the corner of the mouth, and is perforated by the salival gland, near the ear; use, to contract the cavity of the mouth and draw the angle outwards and backwards.

Depressor of the corner of the Mouth—Arises from the lower edge of the under jaw, near the chin; inserted into the angle of the mouth; use, to draw the corner of the mouth downwards.

Depressor of the Lower Lip.—Origin, lower part of the under jaw, next the chin; inserted into the middle of the under lip; use, to draw the under lip downwards and outwards.

Circular of the Mouth.—This surrounds the lips, and is in a great measure formed by the other muscles that move the lips; use, to shut the mouth by contracting the lips.

Depressor of the Upper Lip and Wing of the Nose—Arises from the sockets of the upper front teeth; inserted into the root of the wing of the nose and upper lip; use, to pull the wing of the nose and upper lip down.

Binder of the Nose—Arises from the root of one wing of the nose, and goes across to the other; use, to compress the wings of the nose.

Raiser of the Chin or Lower Lip.—Arises from the lower jaw at the root of the front teeth; inserted in the skin in the centre of the chin; use, to raise the under lip and skin of the chin.

MUSCLES OF THE OUTER-EAR.

Upper Ear.—Arises from the tendon of the occipital forehead above the ear; inserted into the root of the cartilaginous tube of the ear; use, to draw the ear upwards.

Front of the Ear—Arises near the back part of the cheek; inserted into the eminence behind the outward circle of the ear; use, to raise this eminence forwards.

Back of the ear—Arises from the breast-like process, by two and sometimes three, little bundles; inserted into the partition dividing the hollow and shell bone of the ear; use, to draw the ear back and stretch the shell.

Greater outer circle of the Ear—Arises from the upper, front and sharp part of the outer circle; inserted into the cartilage of the outer circle; use, to depress the upper part of the circle.

Lesser muscle of the outer circle of the Ear—Arises from the lower and front part of the outer circle; inserted into the leg of the outer circle; use, to contract the fissure.

Sponge—Arises from the outer and middle part of the shell, near the sponge; inserted into the upper part of the sponge; use, to depress the shell and pull the sponge.

Against the Sponge—Arises from the root of the inner part of the outer circle; inserted opposite the sponge; use, to dilate the mouth of the shell.

Cross of the Ear—Arises from the upper part of the shell; inserted into the lower part of the outer-circle; use, to draw the parts towards each other.

MUSCLES OF THE INTERNAL EAR.

The Relaxer of the Drum—Arises from the spinous process of the wedge bone; inserted into the long process of the hammer; use, to draw the hammer obliquely forward towards its origin.

Stretcher of the Drum—Arises from the cartilaginous extremity of the Eustachian tube; inserted into the handle of the hammer; use, to draw the hammer and membrane of the drum to the rocky portion.

Stirrup Muscle.—A little cavern in the hard portion, near the cells of the breast-like process; inserted into the back part of the head of the stirrup; use, to draw the stirrup obliquely upwards to the cavern.

MUSCLES OF THE LOWER JAW.

Temple Muscle—Arises from the lower part of the side bone and forehead bone, false suture of the temple bone, back part of the cheek bone, the temple-process of the wedge bone, and the expanded tendon that covers it; inserted into the crow-process of the lower jaw, its fibres being bundled together and passed into a small compass, so as to pass under the cheek; use, to move the lower jaw upwards.

Chewing Muscles—Arise in the upper jaw bone, near the cheek bone, and form the front part of the cheek; inserted into the angle of the lower jaw upwards to the basis of the crow-process; use, to raise and move the jaw a little forwards and backwards.

Inner Pen-shaped—Arises from the internal pen-process of the wedge bone; inserted into the inner side and near the corner of the lower jaw; use, to raise the lower jaw, and draw it a little on one side.

Outer Pen-shaped—Arises from the outer pen-process; inserted into the joint-process of the lower jaw and cap ligaments; use, to move the jaw and prevent the ligaments of the jaw from being pinched.

MUSCLES WHICH APPEAR UPON THE FRONT PART OF THE NECK.

Broad Muscle—Arises from the cell membrane covering the breast and triangular muscles; inserted into the side of the chin and coverings of the cheek, use, to draw the cheeks and skin of the face downwards.

Breast and Temple Muscle—Arises from the upper part of the breast bone, and fore part of the collar bone; inserted into the breast-process of the temple bone, as far back as the back suture; use, to move the head to one side, and bend it forwards.

MUSCLES BETWEEN THE LOWER JAW AND TONGUE BONE.

Two Bellied—Arises from a ditch at the root of the breast-pro-

cess; inserted into the lower and front part of the chin; use, to draw the lower jaw downwards.

Grinder-muscles of the Tongue—Arise from the inner surface of the jaw bone; inserted into the base of the bone of the tongue; use, to move the tongue upwards.

Chin and Tongue Bone Muscles—Arises from the inside of the chin; inserted into the base of the bone of the tongue; use, to move the tongue bone upwards.

Chin and Tongue—Arise from the inside of the chin; inserted into the tongue and forming part of its substance; use, to move the tongue in various directions.

Bone of the Tongue—Arises from the horn, base, and cartilage of the tongue bone; inserted into the tongue on the side; use, to draw the tongue downwards and inwards.

Tongue—Arises from the root of the tongue, on the side; inserted into the tongue, on the side; use, to shorten and draw the tongue backwards.

MUSCLES BETWEEN THE TONGUE BONE AND TRUNK.

Breast and Tongue Bone—Arises from the breast and collar bone; inserted into the base of the tongue bone; use, to draw the tongue bone downwards.

Shoulder-blade and Tongue—Arises near the crow's bill process of the shoulder-blade; inserted into the base of the tongue bone; use, to draw the tongue downwards.

Breast and shield—Arises from the upper and inner part of the breast bone; inserted into the shield-like cartilage; use, to pull the shield-cartilage down.

Shield and Tongue—Arises from part of the base and the horn of the bone of the tongue; inserted into the side of the shield cartilage; use, to raise the cartilage, and depress the bone.

Round Shield-shaped—Arises from the side of the round or ring-cartilage; inserted into the lower horn of the shield-cartilage; use, to pull the shield to the ring-cartilage.

SIDE MUSCLES BETWEEN THE LOWER JAW AND TONGUE BONE.

Pencil-tongue—Arises from the top of the pencil-process; inserted into the side of the root of the tongue; use, to pull the tongue backwards.

Pencil-tongue Bone—Arises from the base, and about the middle of the pencil-process; inserted into the base of the tongue bone; use, to draw the tongue bone upwards.

Pencil and Top of the Throat—Arises from the root of the pencil-process; inserted into the edge of the bag, at the top of the throat, and back of the shield-cartilage; use, to dilate the bag at the top of the throat, and raise the cartilage.

Palate-Stretcher—Arises near the Eustachian tube, and passes through the hook of the pen-process, to be expanded upon the hanging veil of the palate; use, to draw slantingly downwards and stretch the hanging veil.

Soft-raiser of the Palate—Arises from the point of the rocky bone, the Eustachian tube, and wedge bone; expanded upon the hanging veil; use, to pull the veil backwards and upwards.

MUSCLES ABOUT THE BACK CAVITY OF THE MOUTH.

Constrictor of the Back Cavity—Arises near the root of the tongue on each side, and goes round, to be inserted into the middle of the hanging veil, near the little grape; use, to raise the tongue and draw the veil towards it.

Palate and Back Cavity—Arises from the middle of the soft palate, goes round the back cavity, the tendon of the stretcher of the palate, and hanging veil, to be inserted into the upper and back of the shield-cartilage; use, to contract the arch of the back cavity.

Palate and Little Grape—Arises from the joining of the bones of the palate; inserted into the extremity of the little grape; use, to shorten and raise the little grape.

MUSCLES OF THE BACK PART OF THE BACK CAVITY.

Lower Constrictor of the Back Cavity—Arises from the ring and shield-cartilages; inserted into the middle of the cavity; use, to compress part of the cavity.

Middle Constrictor of the Back Cavity—Arises from the horn and appendix of the tongue bone; inserted into the compass of the back cavity; use, to compress the cavity and draw the tongue bone upwards.

Upper Constrictor of the Cavity—Arises from the pen-process, the lower jaw, and the wedge-process of the hinder bone; inserted into the middle of the cavity; use, to move the cavity upwards and forwards, and compress the upper part.

MUSCLES ABOUT THE UPPER OPENING OF THE WINDPIPE.

Hinder round Funnel-like—Arises from the round cartilage on the back part; inserted into the back of the funnel-cartilage; use, to open the upper end of the windpipe.

Side round Funnel-like—Arises from the side of the round cartilage; inserted into the side of the funnel-cartilage; use, to open the upper end of the windpipe.

Shield Funnel-like—Arises from the back of the shield-cartilage; inserted into the front of the funnel-cartilage; use, to draw the funnel forwards.

Slanting Funnel-like—Arises from the root of one funnel-cartilage; inserted into the extremity of the other; use, to draw them towards each other.

Crossing Funnel-like—Arises from one of the funnel-cartilages; inserted into the other; use, to shut the upper end of the windpipe.

Shield and upper end of the Windpipe—Arises from the shield cartilage; inserted into to the side of the cartilage, upon the upper end of the windpipe; use, to pull the cartilage obliquely downwards.

Funnel upon the upper end of the Windpipe—Arises from the

side of the upper part of the funnel-cartilage; inserted into the side of the cartilage, upon the upper opening of the windpipe; use, to move the end of the windpipe outwards.

MUSCLES ON THE FRONT PART OF THE ABDOMEN.

External Slanting Descending—Arises from the lower edges of the eight lower ribs, near the cartilages; inserted into the white line,* the front haunch bones, and the spine of the upper haunch bones;† use, to compress the abdomen.

Internal Slanting Ascending—Arises from the spinous process of the three last loin vertebræ, back of the sacred bone, and spine of the upper-haunch bone; inserted into the cartilages of all the false ribs, the white line, front-haunch bone, and the breast bone, by a flat tendon; use, to compress the abdomen.

Transverse Abdominal—Arises from the cartilages of the seven lower ribs, the cross-process of the four last loin vertebræ, and the spine of the upper-haunch bones; inserted into the white line through its whole length, and the sword-like cartilage; use, to compress the entrails of the abdomen.

Straight Abdominal—Arises from the outside of the breast bone and sword-cartilages; inserted into the side of the front haunch bones; use, to compress the abdomen and bend the trunk.

Pyramidal—Arises from the front upper part of the pubis, or front haunch bone; inserted into the white line below the naval; use, to assist the lower portion of the straight muscle.

MUSCLES ABOUT THE MALE ORGANS OF GENERATION.

Excoriator—By some said to be a muscle, but is nothing more than a condensation of the cell membrane, admitting of corrugation and relaxation.

Suspender—Arise from the inguinal ring and Poupart's ligament; inserted into the sheath covering the testicle; use, to draw up the testicles.

Erector Penis—Arises from the eminence of the bone on which we sit; embraces one leg of the penis; inserted into a strong tendinous membrane covering the hollow bodies of the penis; use, to compress the urinary passage.

Accelerator of the Urine—Arises from the constrictor anus, and above the bulb of the urinary passage; inserted into the line in the middle of the bulb; use, to compress the urinary passage.

Transverse between the Thighs—Arises from the fatty membrane covering the protuberance on which we sit; inserted into accelerator of urine and constrictor anus; use, to dilate the bulb of the urinary passage.

MUSCLES OF THE ANUS.

Constrictor—Arises from the skin and fat surrounding the orifice;

* A long narrow tendinous expansion, reaching from the sword-like cartilage to the front haunch bone.

† In this course it forms Poupart's ligament.

inserted into the perineum, accelerator of the urine, and transverse muscles; use, to shut the orifice of the anus.

Raiser of the Anus—Arises from the inner surface of the haunch bones of both sides, in a radiated form; inserted into the constrictor anus, accelerator of urine, point bone, the straight gut, neck of the bladder, &c., like a funnel; use, to draw the straight gut up after the ejection of the fecal matter, and to assist in shutting it.

MUSCLES OF THE FEMALE ORGANS OF GENERATION.

Erector Clitoris, or Female Penis—Arises from the internal leg of the hip bone; inserted into the upper part and body of the clitoris; use, to draw the clitoris downwards and make it tense.

Constrictor of the Sheath, or Vagina—Arises from the constrictor anus and side of the sheath, which it surrounds; inserted into the union of the legs of the clitoris; use, to contract the mouth of the sheath.

MUSCLES SITUATED WITHIN THE PELVIS.

Internal Pulley—Arises from the oval-hole hard ligament, and the haunch bone; inserted into a large pit between the great protuberances of the thigh bone; use, to roll the thigh obliquely outwards.

Point Bone—Arises from the spinous process of the hip bone; inserted into the extremity of the sacred bone, and point bone; use, to move this bone forwards and backwards.

MUSCLES WITHIN THE ABDOMEN.

Midriff—The student will find it described under the class of viscera.

Flat Loin—Arises from the back part of the spine of the haunch bone; inserted into the cross-processes of the loins, and last false rib; use, to support the spine and draw it on one side.

Small Loin—Arises from the cross-processes of the last joints of the back bone; inserted into the brim of the pelvis, near the socket of the hip; use, to bend the loins forwards.

Great Loin—Arises from the bodies and processes of the last back, and all the loin joints of the back bone; inserted into the thigh bone a little below the lesser great protuberance; use, to bend the thigh forwards.

Internal Twisted—Arises from the inner surface of the spine of the haunch bone; inserted into the thigh in common with the great loin; use, to assist the great loin.

MUSCLES ON THE FRONT PART OF THE CHEST.

Larger Breast—Arises from the collar bone, breast bone, and seven true ribs; inserted into the upper and inner part of the arm bone; use, to draw the arm slantingly forwards.

Under Collar Bone—Arises from the cartilage of the first rib; inserted into the under surface of the collar bone; use, to move the collar bone downwards.

Lesser Breast—Arises from the third, fourth, and fifth ribs; inserted into the crow's bill process of the shoulder-blade; use, to roll the shoulder-blade.

Larger front Saw-like—Arises from the eight upper ribs; inserted into the base of the shoulder-blade; use, to bring the shoulder blade forwards.

MUSCLES BETWEEN THE RIBS AND WITHIN THE CHEST.

External Ribs—Arise from the lower edge of each upper rib, inserted into the upper edge of each lower rib; use, to elevate the ribs.

Internal Rib.—Like the former, their fibres are directed from behind, forwards.

Triangular—Arises from the middle and lower part of the breast bone; inserted into the cartilages of the last five true ribs; use, to depress the cartilages of the ribs.

MUSCLES ON THE FRONT OF THE NECK, CLOSE TO THE JOINTS OF THE BACK BONE.

Long Neck—Arises, from the bodies of the three upper back joints and cross processes of the four last neck joints of the back bone; inserted into the front eminence of the second neck joint; use, to pull the neck on one side.

Larger internal straight of the Head—Arises from the cross processes of the five last neck joints; inserted into the wedge process of the hinder bone of the head; use, to bend the head forwards.

Lesser internal straight of the Head—Arises from the fore part of the first neck joint; inserted into the hinder bone, near the cup process; use, to assist the former.

Side straight Muscle of the Head—Arises from the cross process of the first joint of the neck; inserted into the hinder bone, near the breast like process; use, to move the head to one side.

MUSCLES ON the BACK PART OF THE TRUNK.

Four-sided, or Hood Muscle—Arises from the hinder bone, and all the spinous processes of the neck and back, inserted into the collar bone, part of the head, and spine of the shoulder-blade; use, to move the shoulder-blade, bend the neck, and pull the head backwards.

Broadest of the Back.—Arises from the spine of the haunch bone. spinous process of the sacred bone, joints of the loin, and lower back; adheres to the shoulder-blade and lower false ribs; inserted into the arm bone between its eminences in the edge of the groove for the tendon of the two-headed muscle; use, to draw the arm bone backwards and roll it on its axis.

Lower back Saw-like—Arises from the spinous processes of the two last back, and three loin vertebræ; inserted into the lower edge of the three or four lowermost ribs, near their cartilages; use, to draw the ribs outwards, downwards, and backwards.

Rhomboidal—Arises from the spinous processes of the last neck joints, and four first back joints; inserted into the base of the shoul-

der-blade, at the upper and lower part; use, to move the shoulder-blade upwards and backwards.

The Splint—Arises from the spines of the four last neck and four upper back joints; inserted into the two first neck joints and the side of the hinder bone; use, to move the head backwards and to one side.

Upper Back Saw-like—Arises from the spinous processes of the three last neck and two upper back joints; inserted into the second, third, and fourth ribs, by three fleshy tongues.

Of the Back Bone—Arises from two spinous processes of the loins and three lower back joints; inserted into all the spinous processes of the back bone except the first; use, to extend the joints of the back bone.

Raisers of the Ribs—Arise from the cross processes of the last neck and the back joints; inserted into the angles of the ribs; use, to lift the ribs upwards.

Sacred Loin—Arises from the sacred bone, spine of the haunch, the spinous and cross processes of the loin joints; inserted into the lower edge of each rib by a flat tendon; use, to draw the ribs downwards, to move the body upon its axis, to assist the long muscle of the back, and to turn the neck back, or to the side.

Longest of the Back—Arises from the same as the former by one common broad tendon; inserted into the cross processes of all the back and one neck joint; use, to stretch the joints of the back and keep the trunk erect.

Embracer—Arises from the cross processes of the four lower neck and seven upper back joints; inserted into the middle of the hinder bone at its eminence; use, to draw the head backwards.

Neck Breast-like—Arises from the cross process of the three upper back and five last neck joints; inserted into the hinder bone behind the breast-like process of the temple bone; use, to draw the head backwards.

Raiser of the Shoulder-blade—Arises from the cross processes of the four upper neck joints; inserted into the upper corner of the shoulder-blade; use, to move the shoulder-blade forwards and upwards.

Half Back Bone—Arises from the cross processes of the seventh, eighth, ninth and tenth back joints; inserted into the spinous processes of the four upper back and last neck joints; use, to extend the spine obliquely backwards.

Many Slitted Spine—Arise from the sacred bone, haunch bone, slant and cross processes of the loin joints, the cross of the back and four neck joints; inserted into the spinous processes of the loin, back and neck joints, except the first of the neck joints; use, to extend and draw backwards or to one side, the back, and prevent the back bone from leaning too much in front.

Neck Spine—Arises from the cross processes of the six upper joints of the back; inserted into the spinous processes of the five middle neck joints; use, to stretch the neck slantingly backwards.

Transverse Neck—Arises from the crossing processes of the five upper back joints; inserted into the cross processes of the neck joints; use, to turn the neck backwards and to one side.

Larger Back Straight Muscle of the Head—Arises from the cross

process of the second neck joint; inserted into the lower ridge of the occipital bone; use, to extend the head and draw it backwards.

Lesser Back Straight of the Head—Arises from the first joints of the neck; inserted into the occipital bone at its eminences; use, to assist the former.

Upper slanting of the Head—Arises from the cross process of the first neck joint; inserted into the end of the lower occipital ridge; use, to draw the head backwards.

Lower Slanting of the Head—Arises from the spinous process of the second joint of the neck; inserted into the cross processs of the first joint of the neck; use, to draw the face on one side.

Unequal—Arises from the upper surface of the first and second ribs; inserted into the cross processes of the neck joints; use, to move the neck forwards, or to one side.

Inter-spinal—Arises from between the spinous processes of the six lower neck joints; inserted into the spinous process of the joint above; use, to draw the spinous processes towards each other.

Inter-transverse—Arises between the transverse processes of the vertebræ inserted into transverse processes of the vertebræ above; use, to draw the transverse processes towards each other.

MUSCLES OF THE UPPER EXTREMITIES.

Upper-spinated—Arises from the base, spine, and upper edge of the shoulder-blade; inserted into the large eminence at the head of the arm bone; use, to raise the arm.

Lower Spinated—Arises from the cavity below the spine of the shoulder-blade; inserted into the upper part of the same eminence; use, to roll the arm outwards.

Lesser Smooth—Arises from the lower edge of the shoulder-blade; inserted into the greater eminence of the arm bone; use, to assist the former.

Greater Smooth—Arises from the lower corner and edge of the shoulder-blade; inserted into the side of the groove of the long tendon of the two-headed muscle; use, to assist in rolling the arm.

Triangular—Arises from the collar bone and the head and spine of the shoulder-blade; inserted into the front and middle of the arm bone; use, to raise the arm.

Crow's-bill Arm—Arises from the crow's bill process of the shoulder-blade; inserted into the middle and inner side of the arm bone; use, to roll the arm forwards and upwards.

Under Shoulder-blade—Arises from the base, upper and lower edge of the shoulder-blade; inserted into the protuberance at the head of the arm bone; use, to roll the arm inwards.

MUSCLES OF THE ARM BONE.

Two-headed Bender of the Fore-arm—Two heads arise from the crow's bill process, and the other, called the long head, from the edge of the joint cavity of the shoulder-blade; inserted into the eminence at the upper end of the outer-arm, at its fore part, a little below its neck; use, to bend the fore-arm with great strength, and assist the upper muscles.

Internal arm—Arises from the arm bone on each side of the tendon of the triangle; inserted into the crow-process of the fore-arm: use, to assist in bending the fore-arm.

The Three-headed Extender of the Fore-arm—Arises from the neck of the shoulder-blade, and neck and middle of the arm bone; inserted into the upper and outer part of the elbow joint; use, to extend the fore-arm.

Elbow Muscle—Arises from the outer eminence of the arm bone; inserted into the back part, or ridge of the fore-arm; use, to assist in extending the fore-arm.

MUSCLES SITUATED ON THE FORE-ARM.

Long Back Muscle of the Outer-arm—Arises from the outer joint-process of the arm bone; inserted into the outer-arm, near the pencil-process; use, to assist in turning up the palm of the hand.

Longer Extender of the Wrist—Arises the same as before; inserted into the hand bone of the fore finger; use, to extend the wrist.

Shorter Extender of the Wrist—Arises the same as before; inserted into the hand bone of the middle finger; use, to assist the former.

Common Extender of the Wrist—Arises the same as before; inserted into the back of the bones of the fingers; use, to extend the fingers.

Extender of the Little Fingers—Arise the same as before; inserted into the second joint of the little finger; use, to assist in extending the fingers.

Fore-arm Extender of the Wrist—Arises the same as before; inserted into the hand bone of the little finger; use, to assist in extending the wrist.

Fore-arm Bender of the Wrist—Arises from the inner eminence of the arm bone, and head of the fore-arm; inserted into the fourth bone of the first row of the wrist; use, to assist in bending the hand.

Long Palm—Arises from the inner eminence of the arm bone; inserted into the ligament of the wrist, and thence forms the expansion of the hand; use, to bend the hand.

Bender of the Wrist—Arises the same as before; inserted into the hand bone of the fore finger; use, to bend the hand.

Long Roller of the Outer-arm—Arises from the inner eminence of the arm bone, and crow-process of the fore-arm; inserted into the outer ridge of the outer-arm bone, along the middle of its length; use, to roll the hand inwards.

Short Back of the Outer-arm—Arises from the outer eminence of the arm, and edge of the fore-arm; inserted into the front, inner, and part of the outer-arm; use, to roll the outer-arm outward, and assist the elbow.

Extender of the Hand Bone of the Thumb—Arises from the middle of the fore-arm, bony ligament, and outer-arm; inserted into the four-sided bone and the first bone of the thumb; use, to stretch the first bone of the thumb outward.

Extender of the First Joint—Arises near the middle of the fore-arm, bony ligament, and outer-arm; inserted into the convex part of the second bone of the thumb; use, to extend the second bone of the thumb outward.

Extender of the Second Joint—Arises from the back of the fore-arm and bony ligament; inserted into the third and last bone of the thumb; use, to stretch the thumb slantingly backward.

Pointer—Arises from the middle of the fore-arm; inserted into the hand bone of the the fore finger; use, to extend the fore finger.

Upper Bender of the Fingers—Arises from the inner eminence of the arm bone, crow-process of the fore-arm, and upper part of the outer-arm; inserted into the second bone of each finger, after being perforated by the tendon of the deep finger-bender; use, to bend the second joint of the fingers upon the first, and the first upon the hand bones.

Deep Bender of the Fingers—Arises from the upper part of the fore-arm and bony ligament; inserted into the fore part of the last bone of each finger; use, to bend the last joint of the fingers.

Long Thumb-bender—Arises from the upper and front part of the outer-arm; inserted into the last joint of the thumb; use, to bend that joint.

Square Outer-arm Roller—Arises from the inner and lower part of the fore-arm; inserted into the outer-arm, opposite its origin; use, to roll the outer-arm inward.

MUSCLES CHIEFLY ON THE HAND.

Finger Joint Benders—Arises from the tendons of the deep bender; inserted into the tendons of the common extender of the fingers; use, to bind the first, and extend the second joints of the fingers.

Short Thumb-bender—Arises from the square bone, ligament of the wrist and great bone; inserted into the second joint of the thumb; use, to bend that joint.

Antagonist of the Thumb—Arises from the ship bone and ligament of the wrist; inserted into the first bone of the thumb; use, to bend the thumb.

Drawer-away of the Thumb—Arises from the ring ligament and square bone; inserted into the root of the first bone of the thumb; use, to draw the thumb away from the fingers.

Drawer-in of the Thumb—Arises from the hand bone of the middle finger; inserted into the root of the first bone of the thumb; use, to draw the thumb to the fingers.

Abductor of the Fore Finger—Arises from the first bone of the thumb and the square bone; inserted into the first bone of the fore finger on the back part; use, to move the fore finger to the thumb.

Short Palm—Arises from the ring ligament and palm expansion; inserted into the hand bone and skin of the little finger; use, to contract the palm of the hand.

Abductor of the Little Finger—Arises from the ring ligament and pen-shaped bone; inserted into the first bone of the little finger; use, to draw the little finger from the rest.

Inner Abductor of the Little Finger—Arises from the wedge-form bone and wrist ligament; inserted into the hand of the little finger; use, to move that bone towards the rest.

Small Bender of the Little Finger—Arises from the ring ligament and wedge-form bone; inserted into the first bone of the little finger; use, to draw the little finger from the rest.

Inner and Outer Bony—Situated between the hand bones, to the sides of which they are attached; use, to extend the fingers and move them towards the thumb.

MUSCLES OF THE LOWER EXTREMITIES.

Comb—Arises from the fore edge of the front haunch bone; inserted into the upper part of the rough line of the thigh; use, to bend the thigh.

Three-headed Abductor of the Thigh—Long abductor of the thigh—Arises from the upper part of the front haunch bone; inserted into the middle and back part of the rough line; use, to bend the thigh.

Short Abductor of the Thigh—Arises from the fore part and branch of the front haunch bone; inserted into the inner and upper part of the rough line; use, to bend the thigh and move it inward.

Middle Abductor of the Thigh—Arises from the lower and front part of the front haunch bone; inserted into the whole length of the rough line; use, to move the thigh inwards, and help to bend it.

External Pulley—Arises from the hard ligament and half the shield hole; inserted into the thigh, near the root of the great head; use, to pull forward and roll the thigh.

Great Buttock—Arises from the spine of the upper haunch bone, the back sacred ligaments, and the sacred bone; inserted into the upper part of the rough line of the thigh; use, to extend the thigh and assist the rolling motion.

The Middle Buttock—Arises from the spine and upper surface of the upper haunch bones; inserted into the great head of the thigh bone; use, to assist the two former.

Least Buttock—Arises from the outer surface of the upper haunch bone and border of its great notch; inserted into the root of the great head of the thigh; use, to assist the two former.

Pear-shaped—Arises from the front part of the sacred bone; inserted into a cavity at the root of the great head; use, to roll the thigh outward.

Twin—Arises from the spine and protuberance of the hip bone; inserted into the same as the former; use, the same.

Square Muscle of the Thigh—Arises from the protuberance of the bone on which we sit; inserted into a ridge between the two great heads of the thigh bone; use, to move the thigh outward.

MUSCLES SITUATED ON THE THIGH.

Stretching Sheath—Arises from the upper spinous processes of the upper haunch bone; inserted into the inner side of the membranous bundle which covers the thigh; use, to stretch the bundle.

Tailor Muscle—Arises the same as above; inserted into the upper and inner part of the shin bone; use, to bend the leg inward.

Slender—Arises from the front haunch bones; inserted the same as above; use, to bend the leg.

Straight of the Thigh—Arises from the lower spinous process of the upper haunch bones, and the edge of the socket; inserted into the upper and front part of the knee-pan: use, as before.

Great Outer Muscle—Arises from the root of the great head of the thigh bone; inserted into the upper and side part of the knee-pan; use, to extend the leg.

Great Inner Muscle—Arises from the lessor great head and rough line of the thigh bone; inserted into the upper and inner part of the knee-pan; use, as before.

Leg—Arises from the front part of the lesser great head; inserted into the upper part of the knee-pan; use, as before.

Half-tendinous—Arises from the eminence of the bone on which we sit; inserted into the upper and inner part of the shin bone; use, to bend and draw the leg inwards.

Half-membranous—Arises from the eminence of the bone on which we sit; inserted into the back part of the head of the shin-bone; use; to bend the leg.

Two-headed Bender of the Leg—Arises, as the former; inserted into the upper and back part of the shin bone, forming the outer ham-string; use, as before.

Ham—Arises from the outer joint process of the thigh bone; inserted into the upper and inner part of the shin-bone; use, to help to bend the leg.

MUSCLES SITUATED ON THE LEG.

Outer-calf—Arises from the inner and outer joint eminence of thigh bone; inserted into the heel bone with the Achilles tendon; use, to extend the foot.

Inner-calf—Arises from the heads of the shin and outer-shin bone; inserted into the heel bone by the common Achilles tendon; use, as before.

Sole of the Foot—Arises from the outer joint eminence of the thigh bone and cap ligament; inserted into the heel bone near the Achilles tendon; use, to assist in extending the foot.

Front-shin—Arises, from the upper and front part of the shin; inserted into the internal wedge bone; use, to bend the foot.

Back-shin—Arises from the back part of the shin bone, bony ligaments, and adjacent parts of the outer-shin bone; inserted into the middle-wedge form bone, and upper part of the ship bone; use, to move the foot inwards.

Long between the Thigh—Arises from the head of the shin bone, and upper and outer part of the outer-shin bone; inserted into the foot bone of the little toe; use, to move the foot outwards.

Short between the Thighs—Arises from the outer and front parts of the outer-shin bone; inserted into the foot bone of the little toe; use; to help the former.

Long Extender of the Toe—Arises from the upper part of the shin bone, bony ligament, and inner edge of the outer-shin bone; inserted into the first joints of the small toes by four tendons; use, to extend and separate the toes.

Proper Extender of the Great Toes—Arises from the upper and front part of the shin bone; inserted into the raised surface of the great bones; use, to extend the great toe.

Deep and long perforating Extender of the Toes—Arises from the

upper and inner part of the shin bone; inserted into the last bones of the small toes by four tendons; use, to bend the last joint of the toes.

Long Bender of the Great Toe—Arises a little below the head of the outer-shin bone; inserted into the last bone of the great toes; use, to extend the toes.

MUSCLES SITUATED ON THE FOOT.

Short Toe Extender—Arises from the upper and front part of the heel bone; inserted into the first bone of all the toes except the little toe; use, to extend the toes

Upper perforated Short Toe Extender—Arises from the lower part of the heel bone; inserted into the second bone of each small toe by four tendons which are perforated by those of the long extender of the toes; use, to bend the second joint of the toes.

Inward Drawer of the Toes—Arises from the tendons of the toes; inserted into the tendinous expansion of the upper part of the toes; use, to draw the toes inwards.

Short Bender of the Great Toe—Arises from the front part of the heel bone, and external wedge-form bone; inserted into the first joint of the great toe; use, to bend the first joint of the big toe.

Abductor of the Great Toe—Arises from the inner and lower part of the heel bone: inserted into the same as above; use, to move the great toe from the rest.

Drawer-in of the Great Toe—Arises from the ligament extended from the heel bone to the square bone; inserted into the first joint of the great toe; use, to draw the great toe to the rest and bend it.

Abductor of the Little Toe—Arises from the eminence of the heel-bone, and foot bone of the little toe; inserted into the first joint of the little toe externally; use, to draw the toe outwards.

Short Bender of the Little Toe—Arises from the root of the foot bone of the little toe; inserted into the root of the first bone of the little toe; use, to bend the little toe.

Cross of the Foot—Arises from the ligament connecting the bones of the instep; inserted into the tendon of the abductor of the great toe; use, to contract the foot.

Inner and Outer Bony of the Foot—Situated between the foot bones; use, to draw the small toes towards the great toe, and help to extend the toes.

PHYSIOLOGY AND PHENOMENA OF MUSCULAR MOTION.

Muscular motions are of three kinds, namely, *voluntary*, *involuntary* and *mixed*. The voluntary motions are such as proceed from an exercise of the active power of the will; thus, the mind directs the arm to be raised, the tongue to be moved, &c. The involuntary are those which are performed by organs, seemingly of their own accord, without any attention of the mind, or consciousness of its active power; as the contraction and dilatation of the heart, arteries,

veins, absorbents, stomach, intestines, &c. The mixed motions are, those which are in part under the control of the will, but which ordinarily act without our being conscious of their acting; as is perceived in the muscles of respiration, the abdominal muscles, and the midriff.

When a muscle acts, it becomes shorter and thicker; both its origin and insertion are drawn towards its middle. The constricting muscles are always in action; and so likewise are antagonist muscles, even when they seem at rest. When two antagonist muscles move with equal force, the part which they are designed to move remains at rest; but if one of the antagonist muscles remains at rest while the other acts, the part is moved towards the centre of motion.

All the muscles of living animals are constantly endeavoring to shorten themselves.

When a muscle is divided it contracts. If a muscle be stretched to a certain extent, it contracts and endeavors to acquire its former dimensions, as soon as the stretching cause is removed: this takes place in the dead body; in muscles cut out of the body, and in parts not muscular, and is called the *elastic principle*. It is greater in living than in dead bodies, and constitutes the *tone* of the muscles.

When a muscle is wounded, touched, or otherwise irritated, it contracts independent of the will; this power is called *irritability*. It is a property peculiar to and inherent in, the muscles. The parts of our body which possess this property, are called irritable, as the heart, arteries, muscles, &c, to distinguish them from those parts which have no muscular fibres. With regard to the degree of this property, peculiar to various parts, the heart is the most irritable; then the stomach and intestines; the midriff, the arteries, veins, absorbents, and at length the various muscles follow; but the degree of irritability depends upon the age, sex, temperament, mode of living, climate, state of health, &c. and likewise upon the nature of the stimulus.

When a muscle is stimulated, either through the medium of the will, or any foreign body, it contracts, and its contraction is greater or less in proportion as the stimulus applied is greater or less. The contraction of the muscles is different according to the purpose to be served by contraction: thus, the heart contracts with a jerk; the urinary bladder, slowly and uniformly; puncture a muscle and its fibres vibrate; and the abdominal muscles acts slowly in expelling the contents of the rectum. Relaxation generally succeeds the contraction of muscles, and alternates with it.

The use of this property is very considerable; for upon it depends all muscular motion, and every function except that of the nerves.

OF MUCILAGE SACS, AND JOINTS.

Those surfaces of bones which form the moveable joints, are invested, besides the cap and other ligaments, by a thin delicate membrane. The mucilaginous membrane forms a complete sac or bag, which covers the particular surface of one bone, and is reflected from it to the corresponding surfaces of the other; adhering firmly to each of the joint surfaces, and extending loosely from the margin of one surface to that of the other.

It is thin and very flexible, but strong. It secretes or effuses from its surface a liquor called mucilage; which is particularly calculated to lubricate the parts that move upon each other. This fluid is very nearly transparent: it has the consistence of a thin syrup, and is very tenacious or ropy.

There are, in many of the joints, masses of fat, which appear to project into the cavity, but are exterior to the mucilage membrane. They are generally situated so as to be pressed gently, but not bruised by the motions of the bones.

The mucus membrane, like other parts of the joints, is insensible in a sound state; but extremely painful when inflamed.

There is another species of mucus bags, which are found between the tendons and bones, near the joints, and in other places also.—They are formed of a thin dense membrane, and are attached to the surrounding parts by cellular substance; they contain a mucus fluid; and sometimes there are masses of fat, which, although exterior to them, appear to project into their cavities.

They often communicate with the cavities of the joints; and being always situated upon parts that move upon each other, their use, undoubtedly is, to lessen friction.

These mucus bags are very numerous, and some of them are very interesting, on account of their connexion with important joints; but as a particular description of them would be tedious, and of little benefit, it is omitted.

DOCTRINE OF THE VESSELS.

Vessels are long membranous canals, which carry blood, lymph, or chyle. They are divided into arteries, veins, and absorbents. Except the scarf skin and the nails, every part of the body has vessels, as injections demonstrate.

OF THE ARTERIES.

Arteries are elastic membranous canals, which pulsate; they always become narrow as they proceed from the heart towards the extremities. They originate from the two ventricles of the heart, viz. the lung artery, from the right, and the fountain artery (aorta) from the left ventricle; so that there are only two arteries, of which all the rest are branches. The arteries terminate in veins, exhaling vessels, or they unite with one another. They are composed of three membranes called coats: an external one, a middle coat, which is muscular, and an inner, which is smooth. Their use is to convey the blood from the heart to the different parts of the body, for nutrition; preservation of life; generation of heat; and the secretion of different fluids.

THE FOUNTAIN.

Arises from the left ventricle of the heart, forms an arch toward the back joints, then descends through the opening of the midriff into the abdomen, in which it proceeds by the left side of the spine, to the last loin vertebræ, where it divides into the two flank arteries.

In this course it gives off, just above its origin, two crowning arteries to the heart, and then forms an arch.

The ARCH of the fountain gives off three branches, which supply the head, neck, and arms with blood; these are,

The FIRST BRANCH, which divides into the *right head*, and the *right chest* arteries.

II. The LEFT HEAD.

III. THE LEFT CHEST.

The HEAD ARTERIES, having emerged from the chest, run up along the neck, one on each side of the windpipe, to the angle of the lower jaw, where they divide into the *external* and *internal*.

The EXTERNAL HEAD gives off eight branches to the neck and face: 1. *Shield-artery*, which is very serpentine, supplies the shield gland, and gives off branches to several adjacent muscles. 2. *Tongue artery*, lies flat on each side of the tongue, and gives off branches to the tongue bone, back of the tongue, and under tongue. 3. *Lip artery*, also called the outer-jaw, angular and face artery; it gives off the lower palate, under chin, and lip arteries. 4. *Lower arteries* of the back cavity of the mouth; sends a number of small twigs about the back of the mouth, and base of the skull. 5. The *occipital-artery*, from which the *back temple* artery arises. 6. *Back ear artery*, which furnishes the parts about the cartilages of the ear with blood, and transmits the *drum artery* and *pencil-breast artery*. 7. *Inner jaw artery*, is extremely serpentine, and gves off: the *spinous artery*, to the outer membrane of the brain; the *lower jaw artery*, which is included in the lower jaw, and supplies the teeth and face; the *pen arteries*, which nourish the pen muscles; two *deep temporal arteries*, which lie wider than the temple muscle.—The inner jaw artery then gives off a branch, which divides almost immediately into the *teeth socket artery*, and *lower orbital*; then an artery to the palate; the upper back cavity of the mouth artery, which

plays about the wedge canal; and lastly, the *nose artery*, which is transmitted through the wedge palate hole, to the cavity of the nostrils. 8. *Temple artery*, which perforates the salival glands, near the ear, and sends off the *crossing artery* of the face, which unites with the arteries of the face; and several branches which go to the ear, forehead, and about the temples.

The INTERNAL HEAD, or *artery of the brain*, leaves the external at the angle of the jaw, and proceeds by the eighth pair of nerves and rib nerve, to the carotid canal in the rocky portion of the temple bone, where it is shaped like the letter *f*, and enters the skull at the side of the pituitary cavity, having given off two very small twigs to the nose gland, and third, fourth, and fifth pair of nerves; and when it has reached the front couch process, it sends off—1. *Eye artery*, which is distributed on the eye. 2. *Front brain artery*, which proceeds before the pituitary cavity, unites with its fellow, and forms the circle of Willis, from which a branch proceeds to the third ventricle, shining partition, and the artery of the callous body. 3. *A midddle brain artery*, which runs between the front and middle lobes of the brain, gives off the artery of the net-work membrane, and is lost in the middle lobe of the brain. 4. The *communicating artery*, which proceeds backwards and soon unites with the vertebral.

THE RIGHT CHEST ARTERY arises from the FIRST BRANCH, and the LEFT from the *arch of the fountain*. Each chest artery gives off five branches:

1. The *internal breast*, from which arise, the *wart artery*, to the midriff, and the membrane of the heart. 2. The *lower shield*, from which arise, the shield branch arteries, the windpipe arteries, the ascending shield, and the transverse arm arteries. 3. The *vertebral* artery, which proceeds into the vertebral holes, to ascend into the cavity of the skull, where it unites with its fellow upon the wedge process of the hinder bone, and forms the *basillary artery*, which immediately gives off the back artery of the hinder brain; it then proceeds upon the ring eminence to give off four branches, two to the right, and two to the left, which constitute the front arteries of the hinder brain, which branch to the legs of the hinder brain, the hinder brain, worm, legs of the brain, four twin bodies, pine-apple gland, and fourth ventricle; and the *back artery* of the brain, which is joined by the communicating artery, and supply the chambers of the optic nerves. the double centre, the funnel, and legs of the arch, and the back lobes of the brain, uniting with several arteries. 4. The *deep neck artery*. 5. The *superficial neck artery*, both of which are distributed about the muscles of the neck. 6. *Upper rib artery*, which lies between the two upper ribs. 7. *Upper shoulder blade artery*, which sometimes arises from the shield artery, where it is called the cross of the arm.

As soon as the chest artery has arrived in the arm-pit, it is called the *arm-pit artery*, which runs into the arm where it is called the *arm artery*.

The *arm-pit artery* gives off—1. The four *breast arteries*, which supply blood to the muscles about the breast. 2. The *under shoulder-blade*, which supplies the lower surface of the shoulder-blade.

3 The *back circular artery*, and 4. The *front circular artery*, which ramify about the joint.

The arm artery gives off—1. Many side vessels. 2. The *upper deep artery* of the arm. 3. *Lower deep artery* of the arm. 4 *Great communicating branch*, which communicates round the elbow joint.

The *arm artery* then becomes the *fore-arm artery*, and gives off the *outer-arm artery*.

1. The fore-arm artery sends off the *recurrent branches*, which unite with the great communicating branch. 2. *Common inner bony artery*. It then sends small branches to the adjacent muscles as it proceeds down to the wrist; just before it arrives here, it gives off the *back fore-arm artery*, which goes round to the back of the little finger. At the wrist it gives off the *deep palm artery*; then forms a great arterial arch, called the *superficial palm arch*, which supplies branches to the fingers.

The *outer-arm artery* gives off the *outer-arm recurrent*, proceeds to the wrist, where the pulse is felt, and gives off the superficial of the palm of the hand, then divides into the artery of the back of the thumb, the outer-arm artery of the fore-finger, great artery of the thumb, and deep palm artery.

THE DESCENDING FOUNTAIN gives off, *in the breast*—

1. The arteries which nourish the lungs.
2. The arteries of the gullet, or food canal.
3. The arteries between the ribs.
4. The lower midriff.

Within the abdomen, or belly, it gives off eight branches.

The belly artery, which divides into three branches.

1. *The liver artery*, which gives off—*a*. the *duodenum gastric* artery, which sends off the *right gastric caul artery*, and the pancreatic artery. The latter transmits the lower hairy, and the transverse pancreatic arteries. *b*. The upper hairy liver artery.

The liver artery then ramifies through the liver.

2. The *gastric artery*, which gives off the *upper crown* and *upper hairy arteries*.

3. The *spleen artery*, from which arise the *greater* and *lesser pancreatic* arteries, the hinder gastric arteries, the left caul artery, and the short artery.

2. The *upper mesenteric arteries*, of which the *right middle* and *small-gut colic arteries* are branches.

3. The *kidney arteries*, are short, and divide into three or four branches in the basin of the kidney

4. The *spermatic arteries*, which are very small and long, and proceed with the spermatic cord to the testicles.

5. The lower *mesenteric artery*, from which arises the *left colic artery*, and the internal pile artery.

6. The *loin arteries*, which nourish the muscles and joints of the loins.

7. The *middle sacred artery*, which is distributed about the sacred bone.

The descending FOUNTAIN then divides, and becomes the two FLANK ARTERIES; and these soon divide into *internal* and *external*

Each EXTERNAL FLANK ARTERY gives off five branches: 1. The side sacred arteries, three or four in number. 2. The buttock, which ramify about the haunch-bone, and supply the buttock muscles. 3. The artery of the hip-bone, which turns downwards along the hip and gives off the point-bone artery. 4. The front, or share artery, which is sometimes a branch of the sciatic artery; it proceeds out of the pelvis, through the sciatic notch, returns into the pelvis, and runs towards the union of the front bones. In its course it gives off branches to the little seed vessels, the gland at the neck of the bladder, and the *lower pile artery* to the anus, then forms the artery between the thigh and the penis arteries, which proceed one on each side; and a branch which plunges deep into the substance of the penis. 5. The hardener, which passes through the oval hole, and is distributed on the thick muscles of the thigh.

Each EXTERNAL FLANK gives off—1. The lower belly artery, which is reflected from Poupart's ligament upward along the abdomen. 2. The circular flank artery, runs along the crest haunch of the bone.

The external flank then passes under Poupart's ligament, becomes the *thigh artery*, and is continued along the thigh into the ham artery. In this course it gives off near the groin—1. The deep artery of the thigh, which gives off the first, second, third and fourth perforating arteries, which supply the muscles of the thigh. The thigh artery then makes a spiral turn round the thigh bone, and sends off small branches to adjacent muscles. About two hands breadth from the knee, it gives out—2. The great joining branch, which ramifies about the knee joint.

The thigh artery having reached the ham, it is called the HAM artery, which gives off several small branches about the joint, and divides below the ham into the front shin and back shin arteries.

The FRONT SHIN artery soon perforates the bony ligament, and passes along the shin over the bones of the base of the foot, and there joins with the back artery. In this course it gives off—1. The recurrent, which unites with the joint branches of the ham: it then sends off small branches to the muscles as it passes down the leg. 2. The inner ancle artery, about the inner ancle. 3. The outer ancle artery. 4. The instep artery. 5. The foot artery, about the tendons of the foot bones. 6. The back external great toe artery, which runs along the foot bone of the great toe.

The BACK SHIN artery passes along the back part of the bone, goes round the inner ancle and divides at the heel into the sole of the foot arteries. In this course it sends off—1. The nourishing artery of the shin, which gives branches to the ham, front shin, and sole of the foot muscles, before it enters the bone. 2. Many small branches, as it passes downwards. 3. Inner sole of the foot artery, runs on the inner edge of the sole of the foot, and sends four branches about the foot. 4. External sole of the foot, which forms an arch and joins with the front shin artery, and gives off the toe branches.

LUNG ARTERY.

The LUNG ARTERY arises from the right ventricle of the heart, and conveys the blood into the lungs, that is returned to the heart by the

veins: not for their nutrition, but to receive from the air in the lungs a certain principle, necessary for the continuance of life, and which the arterial blood distributes to every part of the body. It soon divides into a RIGHT and LEFT, the right going to the right lung, and the left to the left lung, where they divide into innumerable ramifications, and form a beautiful net-work upon the air vessels, and then terminate in the lung veins.

THE ACTION OF THE ARTERIES.

The arteries, by the impulse of the blood from the ventricles of the heart, are dilated and irritated, and by means of their muscular coat, contract upon the blood, and thus propel it to the glands, muscles, bones, membranes, and every part of the body, for their nutrition and the various secretions, and then into the veins. This dilatation and contraction is called the PULSE, which is perceptible *in* the trunks and branches of the arteries, but not in the fine vessels of the surface, except when inflammation is going on.

OF VEINS.

Veins are membranous canals, which do not pulsate: they gradually become larger as they advance towards the heart, in which they terminate, and bring back the blood from the arteries. They originate from the extremities of the arteries, by arising out of them. The termination of all the veins is into the auricles. They run by the sides of the arteries, but more superficially. They are composed, like arteries, of three membranes, but which are half transparent and more delicate. *Valves* are thin semi-lunar membranous folds, which prevent the return of the blood in the vein.

The blood is returned from every part of the body into the right auricle:—The *upper cave vein* receives it from the head, neck, chest, and upper extremities: the *lower cave vein* from the abdomen and lower extremities; and the crown vein receives it from the crown arteries of the heart.

THE UPPER CAVE VEIN.

This vein terminates in the superior part of the right auricle, into which it evacuates the blood, from the right and left *chest veins*, and the *single vein*.

The right and left chest veins receive the blood from the head and upper extremities, in the following manner:

The veins of the fingers receive their blood from the finger arteries, and empty it into: 1. The vein which runs on the back of the hand along the thumb, and evacuates itself into the *external outer-arm vein*. 2. The *saving vein*, which runs along the little finger, unites with the former, and empties its blood into the inner and outer fore-arm

veins. At the bend of the fore-arm are three veins, the great head vein, the king vein, and the middle vein.

The *great head* runs along the upper part of the fore-arm, and receives the blood from the external outer-arm vein.

The *king vein* ascends on the under side, and receives the blood from the external and internal fore-arm veins, and some branches accompanying the *arm artery*, called the satellite veins.

The *middle vein* is in the middle of the fore-arm, and arises from several branches. These three veins all unite above the bend of the arm, and form,

The *arm vein*, which receives all their blood, and is continued into the arm-pit, where it is called

The *arm-pit vein*. This receives also the blood from the shoulder-blade, and upper and lower parts of the chest; it then passes under the collar-bone, and unites with the external and internal jugular veins, and the vertebral vein, which brings the blood from the vertebral canals; it receives also the blood from the partition of the chest, membrane of the heart, midriff, wart, internal breast, and end of the wind-pipe veins, and then unites with its fellow to form the *upper cave vein*.

The blood from the external and internal parts of the head and face is returned in the following manner into the external and internal jugulars, which empty into the chest veins under the collar bone.

The forehead, angular, temple, ear, under the tongue, and occipital veins, receive the blood from the parts after which they are named; these all converge to each side of the neck, and form a trunk, called the *external jugular vein*.

The blood from the brain, hinder brain, oblong marrow, and membranes of these parts, is received into the veins of the outer membrane of the brain, one of which empties through the lacerated hole in the base of the skull into the internal jugular vein, which descends into the neck by the head arteries; receives the blood of the shield and inner jaw veins, and empties into the chest vein, under the collar-bone.

The single vein receives the blood from the throat, upper partof the gullet, vertebral, and rib veins, and empties into the upper cave vein.

LOWER CAVE VEIN.

This vein is the trunk of all the abdominal veins, and those of the lower extremities, from which the blood is returned in the following manner:

The veins of the toes form on the back of the foot three branches, one on the great toe, a visible vein along the small toe, and one on the back of the foot, and they empty themselves into the veins on the sole of the foot.

The three veins on the upper part of the foot, coming together above the ancle, form the *front shin vein:* and the sole of the foot veins, with a branch from the calf of the leg, form the *back shin vein*. A branch also ascends in the direction of the outer shin-bone. These three branches unite before the ham, into one branch, the *under-ham vein*, which ascends through the ham, carrying all the blood from the foot; it then proceeds upon the fore part of the thigh, where

it is called the *thigh vein*, receives several muscular branches, and passes under Poupart's ligament into the cavity of the pelvis, where it is called the *external flank vein*.

The arteries which are distributed about the pelvis evacuate their blood into the *external pile veins*, the *lower belly veins*, the *inner secret veins*, the *great vein of the penis*, and *hardener veins*, all of which unite in the pelvis, and form the *internal flank vein*.

The external flank vein receives the blood from the external pudendal veins, and then unites with the internal flank at the last vertebræ of the loins, and form the LOWER CAVE vein, which ascends on the right side of the spine, receiving the blood from the sacred loin, right spermatic veins, and the liver cave vein; and arriving at the midriff, it passes through the right hole, and enters the right auricle of the heart; into which it evacuates all the blood from the abdominal viscera, and lower extremities.

LIVER CAVE VEIN.

This vein ramifies in the substance of the liver and brings the blood into the lower cave vein from the branches of the GATE VEIN, a great vein which carries the blood from the abdominal viscera into the substance of the liver. The trunk of this vein, about the fissure of the liver in which it is situated, is divided into liver and abdominal portions. The abdominal portion is composed of *spleen*, *mesentery*, and *internal pile veins*. These three branches carry all the blood from the stomach, spleen, pancreas, caul, mesentery, gall-bladder, and the small and large intestines, into the canal of the *gate vein*. The liver portion of the gate vein enters the substance of the liver, divides into innumerable branches which secrete the bile, and the superfluous blood passes into the corresponding branches of the liver cave vein.

THE ACTION OF THE VEINS.

Veins do not pulsate; the blood which they receive from the arteries flows through them very slowly, and is conveyed to the right auricle of the heart by the contractility of their coats, the pressure of the blood from the arteries, the contraction of the muscles, and respiration; it is prevented from going backwards in the vein by the valves of which there are a great number.

OF THE ABSORBENTS.

Absorbents are very thin and pellucid vessels, which carry the lymph from every part of the body—substances applied to the surface of the body, and the chyle from the intestines—into the chest canals. They are divided into *milky* and *lymphatic*. They are called milky absorbents in the intestinal membrane, lymphatics in every other part. Their figure is branching, becoming broader as they proceed towards their termination. Their valves are numerous, giving them a knotted

appearance. They are supposed to exist in every part of the body, although they have not yet been detected in some, as the brain, &c. They originate in the cellular membrane, the viscera, the external surface, and every part of the body; and terminate in the chest canal, or chest veins. *Lymphatic glands* are situated every where in the course of the lymphatics.

The use of the absorbents is to carry back the lymph from different parts; to convey the chyle from the intestines to the chest canal, where they become mixed and diluted; and to absorb substances from the surfaces on which they originate.

ABSORBENTS OF THE HEAD AND NECK.

Absorbents are found on the scalp and about the viscera of the neck, which unite into a considerable branch that accompanies the jugular vein. Absorbents have not been detected in the human brain; yet there can be no doubt of there being such vessels: it is probable that they pass out of the skull through the canals of the head arteries and lacerated hole in the base of the skull, on each side, and join above the jugular branch, which passes through some glands as it proceeds into the chest to the angle of the chest and jugular vein.

ABSORBENTS OF THE UPPER EXTREMITIES.

The absorbents of the upper extremities are divided into superficial and deep seated. The superficial absorbents ascend under the skin in every direction to the wrist, from whence a branch proceeds upon the back surface of the fore-arm to the head of the outer-arm; over the internal joint eminence of the arm-bone, up to the arm-pit, receiving serveral branches as it proceeds. Another branch proceeds from the wrist along the inner part of the fore-arm, and forms a net-work with a branch coming over the fore-arm bone, from the back part, and ascends on the inside of the arm-bone to the glands of the arm-pit.

The deep-seated absorbents accompany the larger blood vessels, and pass through two glands about the middle of the upper-arm, and ascend to the glands of the arm-pit. The superficial and deep-seated absorbents having passed through the arm-pit glands, form two trunks, which unite into one, to be inserted with the jugular absorbents into the chest duct, at the angle formed by the union of the chest and jugular veins.

ABSORBENTS OF THE INFERIOR EXTREMITIES.

These are also superficial and deep-seated. The superficial ones lie between the skin and muscles. Those of the toes and foot, form a branch which ascends upon the back of the foot, over the tendons of the front leg muscle, forms with the other branches a net-work above the ancles, then proceeds along the shin-bone over the knee, sometimes passes through a gland, and proceeds up the inside of the thigh to the groin glands.

The deep-seated absorbents follow the course of the arteries, and accompany the thigh artery, in which course they pass through some

glands in the leg and above the knee, and then proceed to some deep-seated groin glands.

The absorbents from about the external parts of generation, as the penis, between the thighs, and from the external parts of the pelvis, in general proceed from the groin glands. The deep groin, and groin glands send forth several branches, which pass through the abdominal ring into the cavity of the abdomen.

ABSORBENTS OF THE ABDOMINAL AND CHEST VISCERA.

The absorbents of the lower extremities accompany the external flank artery, where they are joined by many branches from the womb, bladder, spermatic cord, and some branches accompanying the internal flank artery; they then ascend to the sacred bone, where they form a net-work, which proceeds over the loin muscles, and meeting with the milk absorbents of the mesentery, form the THORACIC, or CHEST CANAL, the trunk of the absorbents, which is of a serpentine form, about the size of a crow's quill, and runs up the joints of the back through the back opening of the midriff between the fountain and single vein, to the angle formed by the union of the chest and jugular veins. In this course it receives

The absorbents of the kidneys, which are superficial and deep-seated, and unite as they proceed towards the chest canal;

The absorbents of the spleen, which are upon its enclosing coat, and unite with those of the pancreas;

A branch from the net-work of vessels passing above and below the duodenum, or second stomach, and formed by the absorbents of the stomach, which come from the lesser and greater curvature, and are united about the lower orifice of the stomach with those of the pancreas and liver, which converge from the external surface and internal parts towards the gate of the liver, and also by several branches from the gall-bladder.

PHYSIOLOGY OF ABSORPTION.

Absorption is the taking up of substances which are applied to the mouths of absorbing vessels; thus, the chyle is absorded from the intestinal tube by the milk vessels; the vapour of circumscribed cavities, and of the cells of the cellular membrane, by the lymphatics of those parts; and thus mercury and other substances are taken into the system when rubbed on the skin.

The principle by which this absorption takes place is a power inherent in the mouths of absorbing vessels, depending on the high degree of irritability of their internal membrane, by which the vessels contract and propel the fluid forwards. Hence, the use of this function appears to be of the utmost importance, viz. to supply the blood with chyle; to remove the superfluous vapors of circumscribed cavities, otherwise dropsies would be continually taking place; to remove the superfluous vapor from the cells of the cellular membrane dispersed throughout every part of the body, that an accumulation of lymph may not take place; to remove the hard and soft parts of the body; and to convey into the system the medicines which are applied to the surface of the body.

FORMATION OF BLOOD.

The making of blood appears to be nothing more than the mixing, by the action of the blood vessels, of the chyle with the blood; for as it passes from the chest vein, it changes its color, and when it has reached the heart, cannot be distinguished from the mass of circulating blood.

DOCTRINE OF THE NERVES.

Nerves are long whitish cords, composed of bundles of fibres, which serve for sensation. Their origin is in the brain, hinder brain, oblong marrow and spinal marrow; and their termination is, in the organs of sense, the viscera, vessels, muscles, bones, &c. They are divided into trunks, branches, little branches, nervous fibres, and knots. In substance they are pulpy. Division, into brain and spinal. Number, thirty-nine pair; nine pair of brain nerves, and thirty pair of spinal.

The nine pair of brain nerves, are: 1. The smelling. 2. The optic. 3. The mover of the eye. 4. The pathetic. 5. The triple-twin. 6. The abducent. 7. The ear and face. 8. The great sympathetic nerves. 9. The tongue pair. The thirty pair of spinal nerves are divided into eight pair of neck, twelve pair of back, five pair of loin, and five pair of sacred nerves. Their use is, for sensation in the sensible parts, for the five external senses, as touch, sight, hearing, smelling and taste; and for the motion of the muscles.

NERVES OF THE BRAIN.

The first pair, or *smelling nerves*, arise from the hollowed bodies, pass forwards over the wedge and forehead bones, one to each side of the pituitary cavity, where they send off a number of branches, which go through the sieve-holes of the sieve-bone, to be distributed on the pituitary or mucus membrane of the nose. Use, for smelling.

The second pair, or *optic nerves*, rise from the bed of the optic nerve. cross each other, then pass through the optic holes and perforate the bulb of the eye, and in it form the *retina*, which is the organ of vision.

The third pair, or *movers of the eye*, arise from the legs of the brain, pass forward towards the rocky portion of the temple-bone, where they perforate the outer membrane of the brain, and proceed to the orbital fissure, to be inserted into the muscles of the bulb of the eye, which they move.

The fourth pair, or *the pathetic nerves*, arise from the legs of the hinder brain on their side, pass forwards, pierce the outer membrane of the brain below the third pair, and proceed with them through the orbital fissure, to be inserted into the pulley of the eye.

The fifth pair, or *triple-twin nerves*, arise from the front part of the legs of the hinder brain, and are divided within the cavity of the skull into three branches, viz : the orbital, and upper and lower jaw nerve.

The *orbital nerve* gives off a branch near its origin, which unites with a branch of the sixth pair, to form the great rib nerve : it then divides into three branches, the forehead, which goes through the eye brow hole to the muscles and integuments of the forehead ; the tear nerve, which goes to the tear gland ; and the nasal nerve, which goes to the inner corner of the eye, where it gives off a branch or two, then returns into the skull, and passes through the sieve plate of the sieve-bone, and is distributed on the inner membrane of the nose.

The *upper jaw nerve* goes through the round hole, is divided into, 1st. The wedge-palate nerve, which goes through the wedge-palate hole, sends twigs to the internal pen-shaped muscle, then enters the cavity of the nostrils, and is lost on the Eustachian tube, soft palate, and nose canal of the wedge-bone. 2d. The *back tooth socket branch* descends through the hole by the last grinder, and is distributed to the grinders. 3d. The *lower orbital* nerve, goes through the lower orbital hole, and is distributed on the muscles of the cheek, nose, lips, and communicates with the face nerve.

The *lower jaw* goes out of the skull through the oval hole, giving branches to the muscles and glands in its course, and to the face nerve, and divides as it passes over the pen-muscle into, 1st. The inner tongue, which is connected with the cord of the drum of the ear, and supplies the under tongue glands and contiguous muscles, but more especially the tongue. 2d. The more proper *lower jaw* nerve, which goes into the mental canal of the lower jaw and gives a branch to each tooth, and comes out again to supply the lower lip and chin.

The sixth pair, or *abducting nerves*, arise from the back part of the front branch of the legs of the hinder brain, proceed forwards, perforate the outer membrane of the brain, and send off some branches near the pituitary cavity, which unite with branches of the orbital nerve of the fifth pair, to form the great rib nerve ; they then accompany the third and fourth pair through the orbital fissure, and are distributed on the straight external muscles of the eye.

The seventh pair, or *ear nerves*, originate on each side by two branches, the hard portion and soft portion. The hard portion arises from the fourth ventricle of the brain, passes through the rocky portion of the temple-bone, where it gives off the cord of the drum, proceeds through the pencil breast hole, perforates the salival gland near the ear, then divides into seven or eight branches, which constitute the goose-foot, and supply the salival gland, the ear, muscles of the face, and communicates with the branches of the fifth pair on the face.

The soft portion arises from the oblong marrow, and the fourth ventricle, enters the inner ear passage, and is distributed by innumerable branches on the membrane of the shell and porch, forming the immediate organ of hearing,

The eighth pair, arise by several branches, partly from the oblong

marrow, and partly from the fourth ventricle. It is connected at its origin with Willis' accessory nerves, which ascend through the great occipital hole from the fifth neck nerve; these nerves proceed together through the lacerated hole in the base of the skull. The accessory nerves then separate from the eighth pair, and vanish in the breast, and square muscles of the shoulder-blade. The eighth pair then gives off branches in the neck to the tongue, top of the windpipe, and shield gland; and then descends into the cavity of the chest where it gives off—

1st. The *right* and *left recurrent*, or running back; the former rises on the right side under the chest artery, which it surrounds, and then returns upwards to the shield gland: the latter arises under the arch of the fountain, which it surrounds, and then ascends to the food canal. Both nerves are lost in the muscles of the top of the windpipe and gullet.

2d. Several branches, which proceed to the upper part of the enclosing membrane of the heart, to form, with other nerves, the *heart net-work*, which sends branches to the heart.

3d. The eighth pair then extends on the back surface of the lungs, on each side, and gives off some branches, which, with others, from the heart net-work, and recurrent nerves, form a right and left *lung net-work*, which supplies the lungs and windpipe.

4th. Both trunks of this nerve then descend with the food canal and give off many little branches, which form the *food canal net-work*, from which the food canal and adjoining parts are supplied.

5th. Having passed the diaphragm, or midriff with the gullet, they form, about the upper opening of the stomach, two *stomachic net-works*: the front is expanded upon the front surface of the stomach and its greater curvature; the back, over its back surface and lesser curvature, and it transmits also branches to the liver, pancreas and diaphragm.

6th. The eighth pair also sends some branches to unite with the great rib nerve, and thus concurs in forming the *liver*, *spleen*, and *kidney net-works*.

The ninth, or *tongue pair* of nerves, rise from the oblong marrow, between the olive shape and pyramidal bodies, pass out of the skull through the joint holes, and communicate with the eighth pair and first pair of neck nerves: they then proceed forwards between the jugular vein and head artery, to be distributed on the tongue and bones of the tongue.

Thus it appears, that the *smelling*, *optic*, and *moving nerves of the eye*, arise from the brain; the *pathetic*, *abducting* and *triple-twin*, from the hinder brain, and the *ear*, *sympathetic*, and *tongue nerves*, from the oblong marrow.

NERVES OF THE SPINAL MARROW.

Those nerves are called *spinal* which pass out through the side holes, between the joints of the spine. They are divided into *neck*, *back*, *loin*, and *sacred* nerves.

NECK NERVES.

The neck nerves are *eight* pairs. The first are called *occipital;* they arise from the beginning of the spinal marrow, pass out between the margin of the occipital hole and atlas, form a ganglion on its transverse process, and are distributed about the occiput and neck.

The *second* pair of neck nerves send a branch to the accessory nerve of Willis', and proceed to the salival gland and external ear.

The *third* pair supply the coverings of the shoulder-blade, the square and triangular muscles, and send a branch to the diaphragmatic nerves.

The fourth, fifth, sixth, seventh, and eighth pair, all converge to form the *arm net-work,* from which arise the six following:

NERVES OF THE UPPER EXTREMITIES.

The *arm-pit nerve.* It runs backwards and outwards around the neck of the arm bone, and ramifies in the muscles of the shoulder-blade.

The *outer-skin,* which perforates the crow-arm muscle to the bend of the arm, when it accompanies the middle vein as far as the thumb, and it is lost in its integuments.

The *inner-skin,* which descends on the inside of the arm, where it divides. From the bend of the arm, the front branch accompanies the king vein, to be inserted into the skin of the palm of the hand; the back branch runs down the internal part of the fore-arm, to disappear in the skin of the little finger.

The *middle nerve,* which accompanies the arm artery to the fore-arm, then passes between the internal arm muscle, round the rotating, and perforating muscles, under the ligament of the wrist, to the palm of the hand, where it sends off branches in every direction, to the muscles of the hand, and then supplies the nerves which go to the extremities of the thumb and fore and middle fingers.

The *fore-arm nerve* descends between the arm artery and king vein, between the internal joint eminence of the arm-bone, and the elbow point, and divides in the fore-arm into an outer and inner branch; the former passes over the ligament of the wrist and corn bone of the hand, where it divides into three branches, two of which go to the ring and little finger, and the third forms an arch towards the thumb in the palm of the hand, and is lost in the contiguous parts. The latter passes over the tendon of the fore-arm extender of the wrist and back of the hand, to supply also the two last fingers.

The *outer-arm nerve* passes backwards about the arm-bone, descends on the outside of the arm, between the internal and external arm-muscles, to the fore-arm bone; then proceeds between the long and short upper muscle, to the upper end of the outer-arm, giving off various branches to the adjacent muscles. At this place it divides into two branches: one goes along the outer-arm bone, between the long upper, and internal outer-arm muscles, to the back of the hand, and terminates in the bony muscles, the thumb, and three first fingers: the other passes between the short upper muscle and head of the outer-arm, and is lost in the muscles of the fore-arm.

BACK NERVES.

There are twelve pair of back nerves. The *first* pair gives off a branch to the arm net-work. All the back nerves are distributed to the muscles of the back, ribs, jagged, chest, and abdominal muscles, and the diaphragm. The five lower pairs go to the cartilages of the ribs, and are called rib nerves.

LOIN NERVES.

The five pair of loin muscles are bestowed about the loins and muscles, and skin of the abdomen and loins, scrotum, ovaria, and diaphragm. The second, third and fifth pair unite and form the *hardener* or *pulley* nerve, which descends over the loin muscle into the pelvis, and passes through the shield hole to the pulley muscle. three-headed, comb, &c.

The third and fourth, with some branches of the second pair, form the leg nerve, which passes under Poupart's ligament, with the thigh artery, sends off branches to the adjacent parts, and descends in the direction of the tailor muscle, to the inner joint eminence of the thigh-bone, whence it accompanies the large visible vein of the leg, to the inner ancle, to be lost in the skin of the great toe.

The fifth pair are joined to the first pair of sacred nerves.

SACRED NERVES.

There are five pair of sacred nerves, all of which arise from the horse-tail, or termination of the spinal marrow; so called from their resemblance to the tail of a horse. The four first pair give off branches to the viscera within the pelvis, and are afterwards united to the last loin nerve, to form a large net-work, which gives off the nerve of the hip-bone, the largest in the body. The hip nerve, immediately at its origin sends off branches to the bladder, straight gut, and parts of generation; proceeds from the cavity of the pelvis through the hip notch, between the lower protuberance of the hip-bone and great head of the thigh-bone, to the ham, where it is called the *ham-nerve*. In the ham, it divides into two branches, one of which descends on the outer shin-bone and gives many branches to the muscles of the leg and back of the foot; the other penetrates the calf muscles to the inner ancle, passes through a notch in the heel-bone to the sole of the foot, where it divides into an internal and an external sole nerve, which supply the muscles and tendinous expansion of the foot and toes.

THE GREAT SYMPATHETIC NERVE.

This nerve arises in the cavity of the skull, from the union of a branch of the sixth with a recurrent branch of the fifth pair. It passes out of the skull through the head artery canal, and descends on the sides of the neck, back, and loin vertebræ, and sacred bone, in which course it is joined by filaments from all the spinal nerves, forming small knots at their junctions.

In the neck it only forms three *neck knots*, from which arise the *heart nerves* and *lung net-works*, which send nerves to the heart and lungs. In the chest there arise five branches from the third, fifth, seventh, eighth, and ninth knots, which descend in the course of the vertebræ and pass through the diaphragm, where they unite on each side into one trunk, the *bowel nerve*, which soon unite together, and form the *great half moon knot*, from which nerves are given off to all the abdominal viscera, forming ten net-works, which communicate with one another, and are named after the adjacent viscera, viz: the *stomach net-work*, near the belly artery, supplying the stomach; the *spleen*, *liver*, the *upper*, *middle*, and *lower mesenteric* net-works, two *kidney*, and two *spermatic net-works*.

PHYSIOLOGY OF THE FUNCTIONS OF THE NERVOUS SYSTEM.

Nerves are organs of our senses. Bodies applied to certain parts of our system produce changes in those parts, which changes are conveyed in an unknown manner to the brain, by means of the nerves only, and *sensation* is produced; so that sensation is a property peculiar to the nervous fibre; and hence, all sensible parts are supplied with nerves, although they cannot be detected by the eye.

The senses are distinguished into *internal* and *external*.

The *internal senses* are ideas which the brain, or mind, forms to itself, and may be produced from the external senses, or they may be excited spontaneously: such are, *memory*, *imagination*, *conscience*, *the passions of the mind*, *and reasoning*, by the superior excellence of which, man differs so eminently from the brute.

The *external senses* are smelling, seeing, hearing, tasting, and touching.

OF SMELLING.

Smelling is a sensation by which we perceive the odour of substances. The *organ* of smell is the nervous papillæ, or points of the smelling nerves, or first pair, which are distributed on every part of the pituitary or lining membrane of the nose.

OF SEEING.

Seeing is a sensation by which we perceive bodies around us, and their visible qualities. The *organ* of sight is the *retina*, an expansion of the optic nerves. The *object* of sight is, the rays of light which penetrate the bulb of the eye and stimulate the retina. *Light* is a subtile and solid material, which emanates from the sun or any luminous body with a very rapid motion, in right lines, which are called *rays of light*, and penetrate to the retina in the following manner: the rays fall on the pellucid and convex cornæ of the eye, by whose density and convexity they are united into a focus, which passes the watery humor and pupil of the eye to be more condensed by the crystalline lens. The rays of light thus concentrated, penetrate the glassy humor, to stimulate the retina, upon which they impress the

image of external objects to be represented to the mind through the medium of the optic nerves.

HEARING.

Hearing is a sensation by which we perceive the sound of any sonorous body.

Sound is a tremulous motion of the air, excited by striking any sonorious body. Sound is conveyed to an immense distance in the atmosphere, in straight lines, which are called sonorous rays. Soft bodies diminish or stifle sound; elastic ones increase it. The *organ* of hearing is the soft portion of the seventh pair of nerves, whose pulp is beautifully distributed in the porch, semi-circular canals, and shell of the ear. Hearing is performed in the following manner: the rays of sound emanating from a sonorous body, arrive at the ear, which, by its elasticity and peculiar formation, concentrates them, that they may pass along the external auditory or ear hole, to the membranes of the drum, which they cause to vibrate. The trembling drum conveys its vibrations to the hammer, which is in contact with it: the hammer communicates them to the anvil, the anvil to the circular bone, and the circular bone to the stirrup. The stirrup adhering to the oval window, causes it to vibrate: this then communicates its vibrations to the water contained in the porch and semi-circular canals, and causes very gentle motions of the nervous expansion contained therein, which transmit them to the sensorium commune, or seat of the mind, which is informed of the presence of sound, and judges of its difference. Deepness and sharpness of sound depend upon the number of vibrations given at the same time.

TASTING.

Tasting is a sensation by which we distinguish the qualities of bitter, sweet, sour, &c. substances. The nervous papillæ, or fine points, of the tongue pair of nerves, which are distributed in the top and margins of the tongue, are the chief *organs* of taste. The parts subservient to taste, are: the *tongue*, which gives a convenient situation to the nervous papillæ, and by its extension motion, applies them to the substance to be tasted: the *skin* of the tongue, which moderates any excessive stimulus: the *saliva* and *mucus* of the mouth, which assist the organ of taste when it is necessary, that the substances should be dissolved in order to be tasted, and which also keep the nervous papillæ moist.

TOUCHING.

Touching is a sensation by which we distinguish the qualities of hardness, softness, heat, and cold, &c. of substances, and by which we perceive any substance that comes in contact with the skin, particularly at the points of the fingers. Too great sensation is moderated by the skin, which also defends the papillæ from being dried by the skin.

DOCTRINE OF THE GLANDS.

A GLAND is a small round body, which serves for the secretion or alteration of a fluid. The varieties are, the simple *bag-like*, *globular*, *glomerate*, and *conglomerate;* they are also divided from the liquid they secrete, or change, into oily, mucus, lymphatic, tear, salival, bilious, milk, &c.

A *bag-like gland* consists of a hollow vascular membrane, having an excretory duct ; as the oily and mucus glands.

A *globular gland* consists of a number of lymphatic vessels connected together by cellular membrane, and has no cavity, or excretory duct ; as the lymphatic glands of the lymphatic vessels.

A *glomerate gland* is formed of a number of blood vessels; has no cavity, but is furnished with an excretory duct ; as the tear and breast glands.

A *conglomerate gland*, is composed of many glomerate glands, whose excretory ducts unite and form one large canal, or duct. The pancreas and salival glands belong to this class.

The *excretory duct* of glands, is a thin canal, which goes out of the gland, and strains out, as it were, the secreted fluid, by the contractility of its coats.

The *nerves* and *vessels*, of glands are numerous, and come from the adjacent parts. Glands are connected with other parts by cellular membrane. They are larger in infants than in adults. Their use is, to secrete or change a fluid.

GLANDS OF THE SKIN. The glands under the skin are oily and perforate the skin by their excretory ducts.

GLANDS IN THE CAVITY OF THE SKULL. 1. Glands of the outer membrane of the brain : situated near the upper longitudinal canal of this membrane, in peculiar cavities in the forehead and side bones. 2. Glands of the net-work membrane, of the side ventricles of the brain. 3. The pituitary gland, placed in a folding of the outer brain membrane, in the pituitary cavities of the wedge bone. The funnel of the brain terminates in this gland.

GLAND OF THE EYES. 1. Small, numerous, oily glands, situated under the skin of the eyelids, near their margins. Their excretory ducts open on the edges of the lids. 2. The tear gland, glomerate, and situated above the outer angle of the orbit, in a peculiar depression of the forehead bone. This gland has six or eight excretory canals, which convey the tears, and open upon the inner surface of the upper eyelids. 3. The tear kernel, a small red prominence in the inner corner of the eye, between the edges of the eyelids. It consists of small oily glands, which secrete a filthy humor.

GLANDS OF THE NOSTRILS. The pituitary membrane, lining the nostrils and its canals, is every where furnished with mucus glands, which secrete the mucus of the nose.

GLANDS OF THE EAR.—The wax glands, situated under the skin of the external hearing canal, secrete the wax of the ears.

GLANDS OF THE MOUTH.—The glands which secrete the spittle or saliva, are: 1. Two large conglomerate glands, situated under the ear, between the breast-like process of the temple bone, and corner of the lower jaw. The excretory duct of this gland opens into the mouth. 2. The jaw glands, which are conglomerate, and situated under the angles of the lower jaw. 3. The glands under the tongue. 4. The glands of the cheek, situated on the internal surface of the cheeks. 5. The lip glands, on the inner surface of the lips, under the common membrane of the mouth. 6. The glands of the grinders, on each side of the mouth, between the chewing and constricting muscles, and whose excretory ducts open near the last grinder.

EXTERNAL GLANDS OF THE NECK.—1. The jugular glands are globular, and situated under the skin of the neck, about the external jugular vein: they are in general about twenty in number. 2. The under jaw glands, also globular, and situated in the fat under the jaw. 3. The neck glands, found under the skin in the fat about the neck. 4. The shield gland, a large gland, lying on the ring cartilage, windpipe, and horns of the shield cartilage.

GLANDS OF THE BACK CAVITY OF THE MOUTH.—These are situated under the membrane which lines this cavity, and are mucus, and divided into palate, grape, top of the windpipe, tongue, and throat.

GLANDS OF THE BREASTS.—1. The breast, or milk glands, are situated under the fat of the breasts. Their excretory ducts are termed tubes, and run to the nipple where they open.

GLANDS OF THE CHEST.—The wart, a large gland, peculiar to the fœtus, and which disappears soon after birth; it is situated in the front folding or space of the partition membrane of the chest, under the upper part of the breast bone, above the membrane of the heart. Lymphaties are seen going from this gland to the chest canal. 2. Two large blackish throat glands, near the end of the windpipe, which secrete a blackish mucus. 3. The gullet glands, found under the internal membrane of the food canal. 4. The back glands, situated upon the fourth or fifth vertebræ of the back, between them and the food canal.

GLANDS OF THE ABDOMEN.—The gastric glands, which are mucus or slimy, are situated under the outer membrane of the stomach. 2. The intestinal glands, also mucus situated under the inner membrane of the intestines, especially the large. 3. The mesenteric glands, situated here and there in the cellular membrane of the mesentery. The chyle from the intestines passes through these glands to the chest canal. 4. The liver glands which form the substance of the liver, and separate the bile into the small ducts, which at length terminate in the *liver duct*. 5. The gall bladder glands, which are slimy, and found under the internal membrane of the gall-bladder, especially about its neck. 6. The pancreatic glands, which constitute the pancreas; a small duct arises from each gland, which unite to form the pancreatic duct. 7. The omentum or caul glands, which are globular, and situated in the caul.

GLANDS OF THE LOINS.—1. The upper kidney glands, in the fat

membrane, one above each kidney. 2. The kidneys. (*See Doctrine of the Viscera.*) 3. The loin glands, globular, and situated about the beginning of the chest canal. 4. The flank glands, globular, found about the beginning of the flank vessels. 5. The sacral, which are globate, and adhere to the sacred bone.

GLANDS OF THE MALE ORGANS OF GENERATION.—1. The odoriferous glands, which are oily and situated about the crown of the head. 2. The mucus glands of the urethra, situated under the internal membrane of the urethra. Their mouths open in the urethra. 3. Cowper's glands, are three large mucus glands, two of which are situated before the prostate gland, under the urinary accelerator, and the third more forward before the bulb of the urethra. 4. The *prostate gland,* a very large, heart-like, firm gland, situated between the neck of the urinary bladder and bulb of the urethra. It secretes a milky fluid, which is sent into the urethra by ten or twelve ducts during coition.

GLANDS OF THE FEMALE ORGANS OF GENERATION.—1. The odoriferous glands of the lips and nymphæ, which are oily, and situated under the skin of those parts. 2. The odoriferous glands of the clitoris, which are numerous, are situated about the base of the clitoris, and of the same nature as the former. 3. The mucus glands of the urethra, situated under the internal membrane of the urethra. 4. The mucus glands of the vagina or sheath, situated under its internal membrane.

GLANDS OF THE EXTREMITIES.—The glands in the groin, are globular, or lymphatic, and situated in great numbers in the cellular membrane of the groin region, and receive the lymphatic vessels from the glans penis and lower extremities. The armpit glands, are also globular, and situated in the cellular membrane of the armpit: they are also numerous, and receive the lymphatic vessels from the breasts and upper extremities.

GLANDS OF THE JOINTS.—The small fat-like masses, situated within the moveable joints. Their structure is not glandular, they are composed of fat. By these little masses the lubricating joint-water is separated from the blood.

PHYSIOLOGY OF SECRETION.

SECRETION is a particular function in an animal body, by which a fluid is separated from the blood, different in its properties from the blood.

The *organs* which secrete the various humors are the glands. The proximate or immediate cause of secretion is a specific action of the arteries of the glands; for every secretion is formed from the extremities of the arteries, (the secretion of bile is no exception to this law, for the gate vein takes upon itself the functions of an artery;) thus the mucus glands secrete mucus; the salival glands, saliva, or spittle; the liver glands, bile, the kidneys, urine, &c.

The secreted fluids are the proper stimuli to the receptacles and ducts through which the secretion is to pass to its place of destination; so that the secretions move along the excretory ducts by means of the contractility of their coats and the assistance of the neighboring moving powers.

DOCTRINE OF THE VISCERA.

THE BODY, divided externally into head, trunk, and extremities. HEAD, divided into face, and hairy part. *Hairy part*, into crown, fore part, hinder part, and sides. *Face*, into forchead, temples, nose, eyes, mouth, cheeks, chin, and ears. TRUNK, divided into neck, chest, and abdomen. *Neck*, into front, and back part. *Chest*, into front, back, and sides. *Abdomen*, into front, back, and side regions: Front region, subdivided into three regions; 1. The upper belly, which lies over the stomach, and whose sides are termed the hypochrondriac region; 2. The navel region, surrounding the navel, and whose sides are called the flanks; 3. The lower belly, which lies over the urinary bladder, and whose sides are called groins. The *pubes*, is the hairy part under the abdomen, between the groins. Under the pubes are the parts of generation—in men, the penis and and scrotum—in women the lips and fissure. The space between the genitals and thighs, is called, between the thighs. EXTREMITIES, divided into upper and lower. *Upper extremity*, into shoulder, arm, fore-arm, and hand. *Hand*, into wrist, hand and fingers. Fingers, into thumb, fore finger, middle finger, ring finger, and little finger. *Lower extremity*, divided into thigh, leg, and extremity of the foot. Foot, into instep, foot, and toes.

INTERNAL DIVISION of the body into three cavities, viz.: Cavities of the skull, chest, and abdomen.

COMMON INTEGUMENTS.

These are so called, because they are the common coverings, as it were, to the body; they consist of the scarf skin, the coloring mucus, true skin, and cellular membrane.

The *scarf skin*, is a thin, pellucid, insensible membrane, covering the external surface of the body. It is connected with the true skin, hairs, exhaling, and inhaling vessels. Its color is white. Use, to cover the sensible points of the nerves.

The *coloring mucus* is disposed in a net-like form, between the scarf skin and skin. Its colour is white, in white people, black, in negroes, copper coloured, in Indians, &c. Use, to cover the sensible points of the nerves, to connect the scarf skin, with the skin, and give the colour to the body.

The *true-skin*, a thick membrane between the coloring mucus and cellular membrane, covering the whole body. Substance, fibrous and full of vessels and nerves. Use, for the situation of the organ of touch, exhalation and absorption.

Physiology of perspiration. Perspiration is a species of secretion by which the blood is freed from a quantity of oily fluid by the exhalent arteries of the skin. It is divided into *sensible* and *insensible perspiration*: the former is continually going on, by which

means the surface of the body is kept smooth and moist, and may be detected by placing any part of the skin near a looking-glass, which will become soiled. The latter is sweat, which is observed only occasionally.

The *Nails* are horny plates, situated in the extremities of the fingers and toes. Use, to defend the nervous papillæ from contusion.

Hairs are thin, elastic, dry, filaments, growing out from the skin. Color and situation, various. Called hair, on the head; eyebrows, above the eyes; eyelashes, on the edges of the eyelids; mustaches on the upper lip; beard, on the chin, &c.

The *cellular membrane* is formed of small membranous cells, which are sometimes distended with fat. Its situation is under the skin and in some soft parts. Use, to cover and defend the muscles; to unite the soft parts; and to render the muscular fibres flexible.

OF THE HEAD.

The parts which form the head, are divided into external and internal. The *external parts* are, the common integuments; hair; a tendinous expansion; three pair of muscles; the covering membrane; and the skull itself. The *internal parts* are, the outer membrane of the brain (dura mater); the web membrane, between the outer and inner; the inner membrane (pia mater); the brain; hinder brain; oblong marrow; nine pair of nerves; four arteries, and twenty-four vein canals.

Outer Membrane—A thick membrane, which strongly adheres to the internal surface of the skull, especially about the sutures. Its processes are, the scythe process, which divides the two hemispheres of the brain; the partition which separates the brain from the hinder brain; and the partition separating the two lobes of the hinder brain. It is composed of two strong layers, adhering together by fibrous texture. Its arteries are, the front, middle, and back. The veins are called venous canals; in number they are twenty-two, the principal of which are, the upper longitudinal, side, and lower longitudinal; all of which evacuate their blood through the lacerated hole in the base of the skull, into the internal jugular veins. It has no nerves. Its use is, to form the internal lining of the skull, and to contain and defend the brain and internal parts from compression.

The *web membrane*, is very delicate and transparent; situated between the outer and inner membranes. It is very thin and filamentous, and apparently without vessels or nerves. Use, not known.

Inner Membrane—Thin, and firmly grown to the convolutions of the brain, hinder brain, oblong marrow, and spinal marrow. It is composed almost wholly of vesssels. Use, to distribute the vessels, to and contain the substance of, the brain.

Brain.—A great viscus in the cavity of the skull. Its shape is oval. It is larger in man, in proportion to his size, than in any other animal. Its substance, marrow-like; divided into two hemispheres, right and left. Each hemisphere is sub-divided on its lower surface into three *lobes*, the front, middle, and back. The principal cavities are, two side ventricles, in each of which are several eminences,

and a loose, vascular production of the inner membrane, called the choroid net-work; a *third* and *fourth ventricle*. The principal parts are, the *hard body*, seen when the hemispheres are separated from each other; the transparent partition, which divides the side ventricles; the arch; the finger-like processes; the foot; the channeled bodies, and chambers of the optic nerves, which are formed in the side ventricles; great valve of the brain; front and back joining; four oval bodies, the nates and testes; the pine-apple gland, (so called from its shape: supposed by some to be the seat of the soul); the pituitary, or mucus gland; the white eminence; and the legs of the brain: all of which can only be learnt upon the subject, either natural or artificial. Its arteries are the internal head, and the vertebral. Its veins return from the outer or back part of the brain, and evacuate themselves into the twenty-two venous canals of the outer membrane. Use, it is the organ of all the senses.

Hinder Brain.—A small brain situated in the lower and back part of the head. Divided, into right and left lobe. Substance, similar to the brain. Its eminences are, two legs, a front and back worm-like process, and the tree of life. Its vessels, and use, the same as the brain.

Oblong Marrow.—A marrow-like part lying upon the wedge process of the hinder bone, formed by the connexion of the legs of the brain and hinder brain. Its eminences are, the bridge, pyramidal bodies, and olive-shaped bodies. Use, the same as the brain.

Spinal Marrow.—A continuation of the oblong marrow, which descends in the back bone cavity, from the great occipital hole to the third joint of the loins, in which course, it transmits between the joints, thirty pair of nerves. Its termination is in various nerves, which form the horse-tail. Its membranes, the same as the brain. Its artery, the front spinal. Use, to emit the thirty pair of spinal nerves

OF THE ACTION OF THE BRAIN, HINDER BRAIN, OBLONG MARROW, AND SPINAL MARROW.

The most important functions of an animal body are those of the brain. In order to explain these accurately, it is necessary to mention a few experiments which have been made upon animals.

Upon dividing, compressing, or tying a nerve, the muscles to which the nerve goes, become paralytic. If the nerve, thus divided, compressed, or tied, had any particular sensation, that sensation no longer exists; but upon untying or removing the compression, its peculiar sense returns.

If the brain, hinder brain, or oblong marrow, be irritated, dreadful convulsions take place all over the body.

If any part of the brain be compressed, that part of the body is deprived of motion which has nerves from the compressed part.

From these phenomena, it is evident that the cause of every sensation and motion in the animal body, arises from the brain and spinal marrow, and that from these parts it is conveyed to every sensible part, through the medium of the nerves. Hence, it follows, that the nerves are the organs by which the various sensations are produced. The manner, however, in which the nerves

exercise sense and motion; how the will is conveyed from the brain to the different parts, and how, from the different parts, sensations are conveyed to the brain, remains yet, perhaps, involved in obscurity.

THE EYE.

The parts which form the eye, are divided into external and internal. The *external* parts are the eyebrows, eyelids, eyelashes, the tear gland, the little fleshy excrescence, between the eyelids in the inner angle; the tear points, two small openings on the nasal extremity of each eyelash; the tear canal, formed by the union of the ducts leading from the tear points, which meet and constitute it at the internal angle of the eye; the tear sac, a dilatation of the tear canal, and which ends in the nasal duct, a continuation of the same canal, which conveys the tears into the nose; the muscles of the eyelids; the muscles of the bulb of the eye, and the fat of the orbit.

The *bulb*, or ball of the eye, consists of eight membranes, two chambers, and three humors. The ball is covered on the fore part by an exquisite sensible and delicate membrane, which begins from the edge of the eyelash, and is reflected over the eye to the edge of the other eyelash. This membrane is the seat of inflammations of of the eye, and is called the joining coat. *Membranes.* 1. The hard coat, which is white, and the outermost. 2. The enclosing membrane, which is very strong, and whose vessels run to the centre. 3. The retina, or fine net, which is innermost. 4. The spider's web, which includes the glassy humor. In the front part, are, 5. The transparent cornea, which is a part of the head coat. 6. The iris, a part of the enclosing membrane: it is of various colors; hence, white, black, and blue eyes, &c. 7. The grape, which is the back part of the iris; and, 8. The bag of the crystalline lens. The *chambers of the eye*, are distinguished into the front and back. The front is the space between the transparent cornea and the fore part of the iris: the back, is the space between the grape and bag of the crystalline lens. The *humors* are, the watery, the crystalline lens, and the glassy. The eyeball is connected, in front with the joining coat; behind, with the orbit, by means of muscles and the optic nerve. *Arteries*, the internal orbital, the central, and the optic. The veins empty themselves into the external jugulars. *Nerves*, the optic, or first pair, and branches from the third, fourth, fifth, and sixth pair. Use, it is the organ of vision.

THE EAR.

The soft parts which form the ear, are divided into external and internal. The *external soft parts* are, the ear, in which are various prominences and canals; the outer hearing canal, and membranes of the drum. The *internal soft parts* are, the common bone membrane, which lines every part of the internal ear, and the Eustachian tube, which begins by a large opening in the back cavity of the mouth, and gradually diminishes as it passes along its bony canal into the ear. The arteries are, the internal and external; the veins empty into the external jugular. The nerves of the external ear, are, the

branches of the seventh pair ; those of the internal part are also branches of the seventh pair, but of the soft portion. Use, the organ of hearing.

THE NOSE.

A prominence of the face between the eyes and mouth. It is divided into root, back, top, and wings. The *soft parts* are, the skin, muscles, cartilages, bone membrane, and cartilage membrane. The soft parts of the nostrils, are, a pituitary, or mucus membrane, which lines the internal surface of the nose, and all its cavities, contains the mucus glands, and has distributed on it the smelling nerves, and the bone membrane. Its arteries are branches of the internal jaw artery : the veins empty into the internal jugulars. Its nerves are, branches of the smelling, eye, and upper jaw. Use, for smelling, breathing, and speech.

CAVITY OF THE MOUTH.

The parts forming this cavity are external and internal. The *external* are, the lips, chin, and cheeks ; which are composed of common integuments, and the muscles of the upper and lower jaw. The arteries of the external part, are branches of the lower orbital, lower jaw, and face ; the veins empty into the external jugular. Its nerves are from the fifth and seventh pair.

The *internal* parts of the mouth are, the palate, two tooth socket arches, the gums, tongue, cavity of the cheeks, and three pair of salival glands. Use, for chewing, speech, breathing, swallowing, sucking, and taste.

PHYSIOLOGY OF CHEWING.

Chewing is the grinding of food between the teeth, which is effected by the the jaws, tongue, cheeks, and lips. The powers which move these parts are their various muscles, by which the lower jaw is pulled from the upper, and again brought to it, whilst the tongue perpetually puts the food between the teeth, and the cheeks and lips prevent it, when chewed, from falling out of the mouth. By this process, the food is divided, lacerated, and as it were, ground, and mixed with the saliva and mucus of the mouth, and the atmospherical air, and thus rendered fit to be swallowed and digested ; so that chewing, or mastication, is in fact an incipient digestion.

TONGUE.

A muscular body, moveable in every direction, situated in the cavity of the mouth. Divided into base, body, sides, and top. It is connected with the tongue bone, bottom of the lower tongue cavity, and lower jaw. The *nervous points*, which are situated on the top of the tongue, are pyramidal, or cone-shaped. Its substance is fleshy, covered with a scarf skin, coloring mucus, and true skin, and the cellular membrane. The tongue arteries are branches of the external head artery ; and the veins empty themselves into the external

jugulars. The nerves are from the fifth, eighth, and ninth pair. Its glands are mucus. Use, for speech, mastication, swallowing, suction, and taste.

OF THE NECK.

The parts which form the neck are divided into external and internal. The *external* parts are, the common integuments; the muscles of the neck; eight pair of neck nerves; two head arteries; two vertebral arteries; two external jugular veins; the internal jugular veins; the jugular glands; the shield gland; the eighth pair of nerves of the brain; and the great rib nerve. The *internal* parts are, the back cavity of the mouth; the bag at the top of the food canal; the food canal; top of the windpipe, and windpipe.

THE FAUCES, OR BACK CAVITY OF THE MOUTH.

The cavity behind the tongue and palate veil. The *soft parts* are, the common integuments and mucus glands. Arteries, branches of the external head. Nerves, from the fifth and eigth pair. Use, for swallowing, respiration, speech, and hearing.

TOP, OR FUNNEL OF THE FOOD CANAL.

A muscular bag, like a funnel, situated behind the top of the windpipe, adhering to the back cavity, and terminating in the food canal, or gullet. It is connected by means of muscles with the skull, vertebræ, and tongue bone. Use, to receive the masticated food and convey it into the food canal.

FOOD CANAL.

A membranous muscular tube, descending from the funnel to the stomach. Composed of three coats, viz. a common, muscular, and villous, or rough.

Its arteries are branches of the fountain; and its veins empty into the single vein. Its nerves are from the eighth pair and great rib. It is full of mucus glands. Use, for swallowing.

PHYSIOLOGY OF SWALLOWING.

Swallowing, or deglutition, is the conveying of the masticated food from the mouth into the fauces, and from the fauces through the food canal into the stomach. This is performed by the jaws shutting so as to prevent the food from falling out of the mouth; the tongue is then applied to the palate, by which the food lying upon the tongue is pressed into the back cavity, where it is received by the dilated funnel. The funnel is then irritated to contract, by which the food is expelled into the food canal, by the contraction of whose fibres it is conveyed into the stomach.

The funnel is dilated by its opening muscles, and by the root of

the tongue, tongue bone, and top of the windpipe, being drawn forward and backward by their proper muscles.

The food is prevented, during the act of swallowing, from passing into the back opening of the nostrils, the Eustachian tube, and windpipe, by the hanging palate veil and grape being pressed against the former, and the opening of the windpipe is shut up by the cartilage at the root of the tongue.

When a fluid is to be drank, the head inclines backward, the same actions take place, and the fluid passes on each side of the valve-like cartilage. During swallowing, the food is covered with the mucus of the fauces and food canal.

TOP OF THE WINDPIPE.

A cartilaginous bag, situated behind the tongue, in the front part of the fauces. It is composed of five cartilages; various muscles; and an inner nervous membrane. The cartilages are, the valve cartilage at the root of the tongue; the shield cartilage, which is the largest; two funnel-like; and the ring cartilage, which is below the shield. A very sensible membrane covers their internal surface. *Use*, it is the organ of the voice, and serves also for breathing.

PHYSIOLOGY OF THE VOICE.

The voice is caused by the sound of the air propelled through the upper opening, or top of the windpipe. The shrillness or roughness depends on the diameter of this opening, its elasticity, mobility, lubricity, and the force with which the air is expelled; thus, when the diameter is increased, the voice is more base, and *vice versa*.

SPEECH.

Is the modification of the voice in the cavity of the mouth and nostrils.

VENTRILOQUISM.

Consists, (it is supposed,) in the motion of the grape, valve cartilage, and fauces, by which the sounds are modulated without the lips, teeth, or palate. The mouth being nearly shut, and the voice resounding between the funnel of the windpipe and cavity of the nose, the sound is returned, as if emitted by some one at a distance. Large and expansive lungs, and a deep chest, are supposed to favor ventriloquism.

WINDPIPE.

A tube composed of cartilaginous rings, continued from the funnel, and situated before the gullet. It descends to the breast bone, and there divides into two branches, one to each lobe. These enter the substance of the lungs, and divide into innumerable branches, which terminate in air cells. The cartilaginous rings of the windpipe are not completely cartilaginous, but fleshy on the back part. The internal surface is lined with a very sensible membrane, continued from the funnel. Use, for respiration and speech.

OF THE CHEST.

The cavity situated between the neck and abdomen, is called the chest, or breast. The *external parts* are, the common integuments; the breasts; various muscles and bones. The *internal parts* are; the pleura, or lining membrane of the chest, lungs, heart, wart gland, food canal, chest canal, (thoracic duct;) the arch of the fountain, branches of the cave vein, the single vein; the eighth pair of nerves, and part of the great rib nerve.

THE BREASTS.

Two soft hemispheres adhering to the front and side regions of the chest, most conspicuous in females. On the middle of the outer surface is the *nipple*, round which is a colored circle. Their substance is, skin, fatty or cellular substance, and the milk glands and vessels. The arteries are, the external and internal breast; the veins empty themselves into the armpit and chest veins; the nerves are branches of the upper rib nerve. The lymphatics empty themselves into the armpit glands. Their use, to suckle new born infants.

PLEURA.

A membrane lining the internal surface of the chest, and covering its viscera. It forms a great process called the middle division of the chest, arising from its doubling, which separates the chest perpendicularly into two cavities. It is connected with the ribs, muscles, breast bone, bodies of the back joints, covering of the heart, and diaphragm. Substance, fibrous and vascular. Its use, is to divide the chest into two cavities, and render the surface moist by the vapor it exhales, and to give a membrane to the lungs and heart.

DIAPHRAGM, OR MIDRIFF.

A fleshy and tendinous division, separating the cavity of the chest from the cavity of the abdomen. It adheres, on the fore part to the breast bone and ribs, and behind to the vertebræ. Its substance is tendinous in the centre, and fleshy on the edges. Its upper surface is covered by the pleura, and its lower by the lining membrane of the abdomen. Its apertures are, the *right hole*, through which the ascending cave vein passes to the right auricle of the heart; a *left hole*, through which the gullet and eighth pair of nerves pass into the cavity of the abdomen; and a *back opening*, which transmits the fountain into the abdomen, and the chest canal and single vein into the chest. Its arteries are from the descending fountain; its veins empty into the single vein. The diaphragmatic nerves arise from the spinal nerves of the neck. Use, for respiration, situation of the heart, expulsion of the fœces, and delivery.

LUNGS.

Two viscera, situated in the cavities of the chest, by which we

breathe. Division, into right and left lung; the right has three *lobes*, the left only two. They are connected with the neck and heart. Substance, full of air cells, and vessels for air and blood, connected together by a spongy and cellular substance. It has an external membrane from the pleura. Its nerves are from the eighth pair and great rib. Lymphatics are to be seen on its external surface. Its glands are, large blackish glands about the windpipe. Use, for respiration, voice, and making of blood.

PHYSIOLOGY OF RESPIRATION.

Respiration, or breathing, consists of *inspiration*, or the ingress of air into the lungs, and *expiration*, or the egress of the air from the lungs.

During sleep, respiration is performed without our knowledge, and therefore termed *spontaneous:* but when it can be augmented or diminished according to our will, it is termed *voluntary*. The exciting cause of inspiration is the air rushing into the lungs and irritating its nerves, which irritation is, by consent of parts, communicated to the diaphragm and rib muscles, and compels them to contract. This contraction and the pressure of the elastic air, therefore, dilate the chest. The air being deprived of its stimulus, the rib muscles and diaphragm become relaxed, the cartilages of the ribs and abdominal muscles before expanded, return to their former state; and thus the air is expelled from the lungs. The small branches of the lung artery form a beautiful net-work of vessels on the internal surface of the air cells. During *expiration*, the air vessels are collapsed; consequently, the blood vessels become crooked, and the blood is prevented from passing. In inspiration, then, the air cells being dilated, the crooked vessels are elongated and a free passage afforded to the blood: the very delicate coats of these vessels are also rendered so thin as to suffer a *chemical action* to take place between the air in the cells and the blood in the vessels. This constitutes the principal use of respiration, viz.: the blood absorbing the *oxygen* from the atmospheric air, by which the nervous energy is increased and vital heat generated.

COVERING OF THE HEART.

A membranous bag surrounding the heart; adhering to the diaphragm, pleura, *breast bone*, cartilages of the ribs, gullet, descending fountain, and the veins and great arteries going to and from the heart. Use, to contain the heart, and to separate a fluid, which may lubricate and prevent it from growing to this membrane.

THE HEART.

A muscular viscus situated in the cavity of the above membrane, which serves for the motion of the blood. It is divided externally into base, surfaces, and margins; internally into auricles and ventricles. Its situation is oblique, its lower point almost coming in contact with ribs on the left side. The cavities of the heart are

called auricles and ventricles. The auricles are situated upon the base of the heart, and are so named from their resemblance to dog's ears. They are composed of numerous muscular fibres, which are very delicate, and are lined by an extremely sensible and contractile membrane. They surround the origin of the fountain and lung arteries, when distended, and are separated from each other by a partition.

The *right auricle* has opening into it, at its upper part, the upper cave vein, at its lower part, the lower cave vein, and at one side, the large crowning vein; so that its office is that of receiving the blood from every part of the body. Besides these *openings*, it has one much larger, communicating with the right ventricle, from the margin of which there hangs into the right ventricle, connected with the tendinous cord, a valve, called from its shape, the three-pointed valve.

The *left auricle* is composed of the same materials as the right; it has opening into it the four lung veins; so that the blood of the lung artery passes through the lungs into the left auricle. Besides the openings of the four lung veins, the left auricle has a communication with the left ventricle, and from the margin of this opening there hangs into the left ventricle, a valve. This is also connected to the tendinous cord of the ventricle.

The ventricles are situated in the substance of the heart, and are divided from each other by a thick muscular division. The sides of the ventricles are very thick and composed of strong muscular fibres. In the ventricles are a number of fleshy cords, running in various directions, called columns, and many of them are connected with the valves of the auricular openings by tendinous cords. The ventricles are lined with a similar membrane to that which lines the auricles.

The *right ventricle* has a communication with the right auricle, as before mentioned, in order to receive its blood; it has also an opening into the lung artery, which arises from it, and through which organ the blood is expelled from the ventricle. At the origin of the artery three large valves are placed, called, from their shape, half-moon valves.

The *left ventricle* is much stronger than the right; besides the opening for the entrance of blood from the left auricle, it has also an opening through which it transmits its blood, and this is into the fountain, which arises from it, and has, like the lung artery, three half moon valves placed at its origin.

The vessels of the heart are, *common* and *proper*; the common, are, the fountain, lung artery, and veins, and the cave veins; the proper are, the crowning arteries and veins. The nerves are branches of the eighth pair and great rib. Use, it is the primary organ of the motion of the blood.

CIRCULATION OF THE BLOOD.

The blood is continually in motion, passing from the auricles of the heart into the ventricles; from the ventricles into all the arteries of the body, and from the arteries into the veins, which return it

again to the auricles. The blood is brought from every part of the body to the heart by the two cave veins, which terminate in the right auricle. The right auricle, when distended with blood, contracts and empties itself into the right ventricle: the right ventricle then contracts, and propels the blood into the lung artery, the opening between the ventricle and auricle being shut by the three pointed valves. The lung artery conveys the blood by its numerous ramifications into the small branches of the air cells of the lungs, where it undergoes a change, and passes into the veins, which bring it, by four trunks, into the left auricle of the heart. It is prevented returning from the lung artery into the right ventricle, by the half moon valves, which are placed at its origin. The blood having thus passed through the lungs, and become of a florid, bright red color, distends the left auricle, which is then stimulated to contract, and pours the blood into the left ventricle. This ventricle next contracts and propels the blood through the fountain, to be conveyed by its branches to every part of the body. The valves at the auricular opening into the left ventricle, prevent the blood from returning when the ventricle contracts, into the auricle; and lest the blood should be prevented by any impediments from passing immediately along the fountain, the three half-moon valves, placed at its origin, prevent its regurgitating into the ventricle. From the numerous arteries of the fountain the blood is conveyed into the veins, where it loses its florid color, and becomes darker, to be returned in the way above mentioned, to the right auricle. Thus the blood of the right auricle and ventricle, and of the lung arteries, is of a dark color; and that of the lung veins, left auricle, ventricle, and all the arteries, (except the lung,) of a bright red hue.

From what has been said, it is evident that the action of the heart consists in the alternate contraction and dilatation of its auricles and ventricles. The excessive sensibility of the membrane which lines the auricles and ventricles disposes them to contraction, which is effected by the irritation and stimulus of the blood, and by that of the distension of its cavities.

OF THE ABDOMEN.

A cavity situated between the chest and pelvis, and divided into several regions, as has been already mentioned. The *external parts* are, the skin, five pair of abdominal muscles, and the lining membrane. The *internal parts*, or *viscera*, are, the caul, stomach, small, and large intestines, liver, gall-bladder, mesentery, milk vessels, spleen, pancreas, kidneys, upper kidney glands, descending fountain, and ascending cave vein.

THE LINING MEMBRANE.

A membrane lining the internal surface of the abdomen, and covering all its viscera. It is connected, by means of a cellular membrane, with the diaphragm, abdominal muscles, vertebrae of the loins, bones of the pelvis, urinary bladder, womb, straight gut, and

all the viscera of the abdomen. Use, to contain and strengthen the abdominal viscera, and to exhale a vapour to lubricate them.

THE CAUL. (*Omentum.*)

A fatty membrane, a production of the lining membrane, attached to the stomach, and lying on the anterior surface of the intestines. Divided, into *large* and *small* caul. The former hangs pendulous from the great curvature of the stomach. The small caul fills up the space between the small curvature of the stomach, liver, &c. Immediately behind the biliary ducts there is an opening which will admit the finger, called the Winslow-hole. The arteries are branches of the belly artery; the veins empty into the gate vein. Use, to lubricate the intestines, keep them warm, and to preserve them from concretion.

STOMACH.

A membranous receptacle, which receives the undigested food from the gullet; situated in the upper belly region. Divided, when empty, into a front and back surface; a great and little curvature; upper orifice, and lower orifice. It is connected with the gullet, duodenum, or second stomach, caul, and pancreas; composed of three membranes, or coats, viz: a common, muscular, and villous, coat. Arteries, branches of the belly artery; veins, empty into the gate vein; nerves, branches of the eighth pair. The absorbents of the small curvature terminate in the chest duct, where the belly artery is given off, and those passing along the great curvature join with the absorbents of the spleen. Its glands are mucus, and under the internal coat. Use, to receive the food and to retain, mix, digest, and expel it into the second stomach.

DIGESTION.

Digestion, or chymification, is the change which food undergoes in the stomach, by which it is converted into a pulpy mass, called chyme.

The circumstances necessary to effect a healthy digestion of food, are—

First. A certain degree of heat in the stomach.
Second. A free mixture of saliva with the food in the mouth.
Third. A certain quantity of healthy gastric juice.
Fourth. The natural peristaltic, or worm-like motion of the stomach and intestines.
Fifth. The pressure of the contraction and relaxation of the abdominal muscles and diaphragm. From these circumstances, the particles of food are softened, dissolved, diluted, and intimately mixed into a soft pap, called chyme, which passes through the lower orifice of the stomach into the second stomach.

INTESTINES.

The membranous tube, six times longer than the body, in the cavity of the abdomen, variously contorted from the lower orifice of

the stomach to the anus, is so called. They are divided into small and large. The *small* are, the second stomach, which begins at the lower orifice of the stomach, and is reflected over the spine, under the lining membrane. It is about twelve fingers breadth in length, and has near its middle an oblique perforation, which is the common opening to the pancreatic duct, and the biliary ducts. The *empty*, composes the second portion, and the *twisted*, the remainder, of the small intestines. They always hang from the mesentary into the cavity of the pelvis. There is no alteration of structure in any part of the small intestines; the termination of the one and beginning of the other is imaginary. The *empty* part constitutes the first half from the second stomach, the other half is the *twisted* part. The small intestines have internally a number of annular folds, which augment the surface for the situation of the milk and other vessels. They are peculiar to the small intestines.

The *large* intestines are divided into the *blind gut*, *colon*, and *straight gut*, or *rectum*. The *blind gut* lies upon the right hip over the internal flank muscle, to which it is attached by cellular membrane: it is a large blind sac, open at one end only; the small intestine opens obliquely into it, in such a manner as to form a valve, to impede the return of the fœces; and nearly opposite to this valve there arises from the blind gut a small worm-like canal, imperforate at its extremity, called the *appendix of the blind gut*. The intestine, is now called *colon*: it ascends towards the liver, and is called the ascending portion of the colon, and having reached the liver, forms a transverse arch across to the other side. The colon then descends into the pelvis, where the gut is termed the *rectum*, or *straight gut*, which terminates in the anus.

The large intestines are lobulated, have sometimes little fat portions adhering to them, and also three bands upon their external surface, lengthwise. The intestines are composed of three membranes, or coats; one common, a muscular, and the third villous, or shaggy. They are connected with the mesentery, kidneys, point bone, and urinary bladder; and in women with the vagina. Their arteries are branches of the upper and lower mesenteric, duodenal, and internal pile arteries; veins run into the mesenteric. Their nerves are productions of the eighth pair, and rib nerves. *Milk vessels*. These arise from the small intestines, and run into the mesenteric glands. Glands, mucus, and under the villous coat. Use, to receive the chyme, and retain it for a time; to mix it with the intestinal juice and bile: to separate and propel the chyle into the milk vessels; and to eliminate the fœces.

CHYLIFICATION.

This is the change of the chyme in the small intestines into chyle. The chyme in the second stomach is mixed with the pancreatic juice, the bile, and intestinal juice; from which mixture, effected by the continual peristaltic motion of the intestines, a milk-like fluid is separated, which is termed chyle, and is absorbed by the hanging mouths of the milk vessels, and conveyed through the mesentery into the chest duct, to be sent into and mixed with the blood, to form new blood.

Chylification is performed quicker than chymification, and both are effected within three hours.

The excrementitious particles of the food, called the fœces, are propelled into the blind gut, through the colon, where they acquire a peculiar smell, and thence into the rectum, to be expelled.

EXPULSION OF THE FŒCES.

The irritation of the fœces in the rectum induces it to contract the constricter muscle relaxes, and the fœces are protruded through the aperture of the anus, by the pressure of the abdominal muscles, and the anus closed again by the contraction of the constricter and levator muscles.

MESENTERY.

A membranous duplicature, formed of a production of the lining membrane, to which the intestines adhere. It is connected with the loin vertebræ. Its arteries, the upper and lower mesenteric, and branches of the descending fountain; its veins empty into the gate vein. Nerves, branches of the eighth pair, and rib. The glands, which are situated in the mesentery, are called mesenteric glands. The milk vessels proceed to the glands, and from them to the chest duct. Use, to strengthen the intestines and afford a situation to the milk vessels, glands, and nerves, blood-vessels, &c. of the intestines.

LIVER.

The largest of the abdominal viscera, placed in the right hypochondriac region, and somewhat in the upper belly. Division, into three lobes: the great, small, and a less one. It is connected with the diaphragm by means of the suspensory and other ligaments. Its substance, vascular, full of vessels. The glands which compose the substance of the liver, are called bilious glands. The *excretory ducts* of the glands, are termed bilious pores: they arise from the bilious glands of the liver, form larger trunks, which converge together, and constitute a common canal, the *liver canal*, which unites with the gall duct, and forms the biliary duct. Use, to secrete bile.

GALL BLADDER.

An oblong, membranous bag, situated under the liver, in the right hypochondrium. Divided, into bottom, body, and neck, which terminates in the gall duct. The *gall duct* arises from the gall bladder, proceeds to the duodenum and unites with the *liver duct*, to form the *biliary duct*, which perforates the duodenum, and conveys the bile into the intestines. The gall bladder is composed of three membranes, a common, fibrous, and villous. Its arteries, branches of the liver. Its veins empty themselves into the gate vein. Absorbents, very numerous. Use, to retain the gall, which regurgitates from the liver duct, there to become thicker, more bitter and acrid.

SPLEEN.

A spongy viscus, situated in the left hypochondrium, near the body of the stomach, under the ribs. Its figure is oval. It is connected with the caul, diaphragm, pancreas, and colon. The splenic artery is a branch of the belly artery; the veins empty into the gate vein. Its absorbents are very numerous. Its use is not certainly known.

PANCREAS.

A glandular body of a long figure, compared to a dog's tongue, situated under the stomach. It is composed of innumerable small glands, the excretory ducts of which unite, and form the *pancreatic duct*. This duct perforates the duodenum with the biliary duct, and conveys its secretion into the intestines. Use, to secrete a humour similar to saliva, and carry it into the duodenum.

THE MILK VESSELS.

The absorbing vessels of the mesentery, are so termed, because they convey the chyle, or milk-like fluid, from the intestines into the chest duct. They originate from the surface of the duodenum, or second stomach, the empty, and the twisted portion of the intestines; and terminate in the chest duct, or trunk of the absorbents, which runs near the fountain on the spine, and empties its contents into the jugular vein.

As they run through the mesentery they pass through a number of glands, in which the chyle is altered, and then proceed to their trunk. Use, to carry the chyle from the intestines into the blood.

KIDNEYS.

Two viscera, which secrete the urine, situated behind the sac of the lining membrane, near the bodies of the upper loin vertebræ. Their substance is of three kinds: bark-like, tubular, and point-like. Its coverings are a fat membrane, and a proper membrane. The kidney arteries, or emulgents, are branches of the descending fountain; the veins empty themselves into the lower cave vein. The nerves of the kidneys are branches of the eighth pair and rib. The excretory ducts of the kidneys are called *ureters*, canals which convey the urine from the kidneys into the bladder. Use, to secrete urine.

EXCRETION OF THE URINE.

The urine is separated from the blood by the extremities of the kidney arteries, which open to the substance of the kidney into the urinary tubes, from whence it is received into the pelvis of the kidney, and passes along the ureter into the urinary bladder, drop by drop, where it usually remains a few hours, in consequence of the constricter of the neck of the bladder being contracted. It is prevented returning into the ureters by their entrance being oblique and

valve-like. The urine having remained a few hours, excites a desire to void it, by which stimulus the constricter becomes relaxed, the muscular, structure of the bladder contracts, and by the assistance of the abdominal muscles, and the accelerators, the urine is propelled along the urethra. The *upper kidney glands*, are two triangular flat bodies, situated above each kidney.

OF THE PELVIS.

The pelvis, or basin, is a cavity below the abdomen, and under the pubes, containing the urinary bladder, straight-gut, and organs of generation.

URINARY BLADDER.

A membranous sac under the lining membrane, in the cavity of the pelvis. It is situated, in men, between the pubes and *rectum*; in women, between the pubes and womb. It is divided into bottom, body, and neck; and composed of three coats, like the intestines. Its arteries are branches of the flank and pile arteries: veins empty into the flank veins. Nerves, branches of the rib and sacred nerves. Use, to receive, retain, and expel the urine.

THE MALE ORGANS OF GENERATION.

These are the penis, testicles, and seed vessels.

PENIS.

That round, cylindrical body, or yard, which hangs under the pubis, before the scrotum. Divided into root, body, and head, called *glans*. The hairy prominence which covers the pubis, is called the *mount of love*. Substance. It consists of skin, two cavernous bodies, and the spongy body of the urethra. The cavernous bodies, which form the chief bulk of the penis, are composed of a cellular and very elastic substance, and arise by two legs, one from each ascending branch of the front haunch bone. The spongy body begins before the prostrate gland, and surrounds the urethra. At its beginning it forms the bulbous part of the urethra, and then proceeds forward, to be expanded at the extremity of the penis into a very vascular substance, called the *glans penis*, which is naturally covered by a fold of the skin, called *fore-skin*. The *urethra* is a membranous canal, which proceeds from the bladder through the spongy body, to the opening in the head. It is endowed with a high degree of sensibility and contractility. Its glands are mucus, and odoriferous; Cowper's glands, and the prostrate gland. The penis is connected with the urethra, pubis, and front haunch bones. Its arteries are branches of the flank and hip arteries. The *back vein* of the penis empties itself into the flank vein. The absorbents run under the skin, to the groin glands. Nerves, branches of the sacred nerves, and hip. Use, for erection, coition, effusion of semen, and of urine.

TESTICLES.

Two oval bodies, contained in the cavity of the scrotum. There is a hard vascular body, formed of convolutions of the conveying duct, lying on the testicle. The integuments of the testicle are, the scrotum; the *white coat*, which is smooth, and adheres very firmly to the body of the testicle; and the *sheath coat*, which descends with the spermatic cord, and surrounds the testicle, as the membrane does the heart. It is composed of white slender canals, which terminate in the little body upon the testicle, and form into one great canal, called the *conveying duct*, which proceeds from the testicle into the abdomen, over the share bone, and then descends into the pelvis, to be inserted into the seminal vessels. The spermatic arteries are branches of the fountain; and the veins empty into the cave vein and kidney veins. The nerves are branches of the great rib, and loin nerves. The absorbents ascend from the testicle through the cord. The *spermatic cord*, consists of the conveying duct, spermatic artery and vein, spermatic nerves, absorbent vessels, and sheath coat, which the suspender muscle surrounds. Use, to secrete and prepare semen, or seed.

SECRETION AND EXCRETION OF THE SEMEN.

The semen is secreted by minute branches of the spermatic arteries, that deposit it into the corresponding seminal vessels, which compose the greater part of the body of the testicle. The semen is the proper stimulus to these vessels, which are therefore stimulated to contract, and by a very slow motion convey it into the little body and conveying duct, by which it is carried through the groin ring into the pelvis, to be deposited in the seminal vessels, where it excites a desire to emit it. The cells of the two cavernous bodies of the penis are distended with blood by the venereal stimulus; hence, the penis swells, and is inclined for coition, during which action, at the height of pleasure, the seminal vessels contract, and the semen is thrown with an immense force, through the ejaculatory ducts, opening into the urethra, where it is mixed with the secretion from the prostate gland, which is expelled at the same moment, and passes with it along the urethra, to be propelled by the contraction of the ejaculatory muscles into the cavity of the womb.

SEMINAL VESSELS.

Two membranous receptacles, which receive and contain the seed from the conveying ducts. They are situated on the back part of the bladder, above its neck. Substance, membranous, white, and covered with a fibrous substance. The *ejaculatory ducts* are some lines long, and enter the cavity of the urethra from each seminal vessel, by a peculiar orifice at the top of the little cock's head eminence in the urethra before the neck of the bladder. Their absorbent vessels arise from the seminal vessel, and run to the lymphatic glands about the loins. Use, to contain, retain, thicken and expel the semen into the urethra.

THE ORGANS OF GENERATION IN WOMEN.

The parts which serve for generation in women are divided into external and internal. The *external parts* are, the hairy prominences; the larger lips, two cutaneous folds, situated externally; the lesser lips, or nymphæ, also two cutaneous folds, like a cock's comb, placed at the sides of the vagina; the *clitoris*, a small gland-like body, like a penis in miniature, placed under the upper joining of the nymphæ; and the *hymen*, a membrane for the most part semi-lunar, situated at the entrance of the virgin vagina. The *internal parts* are, the vagina, or sheath; womb; Fallopian tubes; ovaria; broad and round ligaments of the womb; and the urethra.

VAGINA.

An elastic canal leading from the lips to the womb. It is composed of three membranes; the outer is cellular, the middle muscular, and the internal rough. Glands, mucus, situated in the internal membrane. Use, to receive the penis, and for the passage of the child in delivery.

WOMB.

A spongy receptacle, like a flattened pear; situated in the pelvis, between the urinary bladder and rectum. It is divided into bottom, body, neck, and orifice. The substance of the womb is spongy, interwoven with muscular fibres. Its arteries are, the spermatic, which are branches of the fountain; and the womb arteries, which are from the flank and pile arteries. The veins are without valves, and empty themselves into the spermatic flank, and external pile veins. Its absorbents run into the flank glands. The nerves are branches of the sacred and hip. Glands, mucus. Use, for conception, nutrition of the fœtus, parturition, and menstruation.

PHYSIOLOGY OF MENSTRUATION.

By a law of nature, women menstruate in this climate from about the age of fourteen to forty-five. Menstruation is the efflux of blood from the vessels opening into the cavity of the womb. During pregnancy, the *menses*, (for so the discharge is called,) stop, except in some few instances, where it is supplied by the vessels of the vagina.

The nature of the menstrual blood, if women be healthy, differs only from other blood in its not coagulating, which may be caused by its slow exit, and its mixture with the secretions of the womb and vagina. It differs, however, in quantities, the period of its first appearance, its duration, and the symptoms which precede and accompany it, according to the age, temperament, habit of body, climate, season of the year, mode of living, and other circumstances.

Women are said to be most susceptible of the action of the vivifying principle of the seed, immediately after the period of menstrua-

PHYSIOLOGY OF CONCEPTION.

The congress between man and woman is called coition, or copulation, which is so well known as to need no description.

During coition, the nymphæ and clitoris are tumid with blood, and the fringed ends of the Fallopian tubes, by a power inherent in them, are stretched out, and applied over the surface of an ovum, or egg, in the ovarium.

The pleasure which women experience during coition is very great, and a quantity of mucus is suddenly emitted from the glands of the vagina, during the venereal orgasm, which in former times, was erroneously supposed to be the semen of the female, but now it is the opinion of physiologists that women have no semen, as anatomy cannot detect any organ by which it can be secreted.

In order that a woman *may conceive*, it is requisite that she shall have menstruated; that the egg in the ovarium shall have arrived at a state of maturity, and that the fringe of the Fallopian tube shall be stretched around the mature egg, so as to let the cavity of the tube come immediately over it. In this state, the male semen is emitted into the womb, and its vivifying part, which is extremely subtile, flies through the cavity of the womb, along the Fallopian tube to the mature egg, to which it imparts a principle by which it begins to circulate its fluids and is animated. The egg, being thus vivified, enlarges and ruptures the slender coat of the ovarium, in which it was enclosed. At the time of its rupturing, the fringe of the Fallopian tube embraces it, and it is rolled, by the peristaltic motion of the latter into the cavity of the womb, there to be perfected, and at the end of nine months, to be sent into the world.

OF THE PREGNANT WOMB.

The parts of the impregnated womb, are, the placenta, the navel cord, the membranous egg of the fœtus, the liquor of the inner membrane enclosing the fœtus, and the fœtus, or child.

PLACENTA.

A spongy mass, like a cake, generally adhering to the bottom or extreme part of the impregnated womb, composed of a net-work of very numerous vessels. Its substance is cellular, like a sponge filled with vessels. *Use*, to receive and prepare the blood from the womb for the fœtus, and give off branches to the navel vein.

NAVEL CORD.

A cord of an intestinal form, which runs from the navel of the fœtus to the centre of the placenta, or after-birth. It is mostly about half a yard in length. Composed, of a skin-like sheath, a cellular substance, one navel vein, and two navel arteries. *Use*: the navel vein of the fœtus conveys the blood from the placenta to the fœtus, and the two navel arteries return it from the fœtus to the placenta.

MEMBRANOUS EGG OF THE FŒTUS.

The fœtus is enclosed in a membranous egg or bag within the cavity of the womb. The egg consists of three membranes; the outer, a thin and delicate membrane adhering to the womb; a middle one; and the inner one, which is soft and shaggy. Use, to include the liquor, to prevent its flowing into the womb, and at the commencement of parturition, or delivery, to assist in dilating the mouth of the womb.

LIQUOR OF THE EGG.

A lymphatic liquid enclosed in the egg surrounding the fœtus, secreted by the exhaling arteries of the membrane of the egg. Its quantity about the time of delivery is two or three pounds. It has a gelatinous property, like the thick serum of milk. Use, to defend the fœtus from the pressure of the womb, to give it nourishment, to dilate the orifice of the womb in labor, and to lubricate the vagina.

FŒTUS.

During the first month of pregnancy, the egg is about the size of a pigeon's egg; the fœtus swims in the middle of the liquor, and represents a little cloud, which gradually enlarges, and its parts become more firm and perfect. The parts of the child at birth differ from the adult, in having an *oval hole* between the two auricles of the heart; an arterial canal between the lung artery and fountain; and a venous canal conveying the blood from the gate to the cave vein. The lungs are black, collapsed, and sink in water. The liver is large. All the small glands are proportionably large, and the large intestines are filled with a green excrement, called *meconium*. All the canals and vessels peculiar to the fœtus are obliterated after birth, and become ligaments.

Peculiarities in the arterial and venal system of the fœtus.—The fœtus has: a *navel vein*, which goes to the liver, and two *navel arteries* which arise from the internal flank—a *venous canal*, which proceeds from the canal of the gate vein into the cave vein—an opening in the partition of the auricles, called the *oval hole*, and an *arterial canal*, which arises from the lung artery and passes obliquely into the fountain. After birth, these vessels gradually become impervious, and at length are removed by the absorbents.

Circulation of blood in the fœtus.—Receives its blood from the mother, through the navel vein, which transmits it along the vein canal into the cave vein, to be carried to the right auricle of the heart; from the right auricle it passes partly through the oval hole into the left auricle, and partly into the right ventricle. From the right ventricle it is propelled into the lung artery, which sends a very small proportion through the lungs, and the remainder through the arterial canal into the fountain. The blood is returned from the fœtus by two navel arteries, along the cord, to the mother.

DOCTRINE OF THE FLUIDS.

The fluids of the body are divided into *crude*, as the chyle; *sanguineous*, as the blood; *lymphatic*, as the lymph of the lymphatic vessels, *secreted*, or those separated from the blood; and *excrementitious*, as urine, fæces, &c.

The secreted fluids are subdivided into *milky*, as the juice of the prostate gland; *watery*, as the humor of the eye; *mucus*, as the mucus of the nostrils; *albuminous*, as the serum of the blood; *oily*, as the oil of the fat membrane; and *bilious*, as the bile.

Fluids are also divided, from their motion, into *circulatory*, which continually circulate in the vessels; the *tardy*, which circulate with slow motion, as the semen, oil of the fat membrane, &c.; *stagnant*, which remain for a certain time in any receptacle, as bile in the gall bladder, &c.

FLUIDS COMMON TO THE WHOLE BODY.

THE BLOOD.

A red fluid, which circulates in the cavities of the heart, arteries, and veins. Color: in the arteries, of a *florid* hue; in the veins, *darker*, except in the lung veins, in which it is of a *lighter* cast. Blood, exposed to the atmosphere, spontaneously separates by degrees into two parts, viz. the *serum*, a yellow and somewhat greenish fluid; and a *cake*, called *crassamentum*, which resembles a red mass swimming like an island in the serum. Use, to stimulate the cavities of the heart and vessels to contraction; to generate the heat of the body, and propagate it to every part, to nourish every part; and to supply all the secretions, they being all separated from the blood.

THE LYMPH OF THE LYMPHATIC VESSELS.

A tasteless, crystalline liquid, contained in the lymphatic vessels. It is absorbed from the surface; cellular membrane; viscera; and cavities of the viscera of the whole body; and it is conveyed into the chest duct. Use, to retain the superfluous nutritious fluid, the vapors of cavities, and substances applied to the skin, and to the chest duct.

THE VAPOR OF THE SHEATHS OF THE NERVES.

The watery vapor contained in the sheath, and between the fibres of the nerves. Use, to moisten the nervous fibres.

FLUIDS PROPER TO EACH PART.

IN THE CAVITY OF THE SKULL.

The vapor in the ventricles of the Brain.—A thin vapor contained in the cavity of the ventricles of the brain, and secreted by the

exhaling arteries of the net-work of the side ventricles. Use, to prevent the concretion of the ventricles, and keep the brain moist.

IN THE CAVITY OF THE NOSTRILS.

The mucus of the Nostrils—Secreted by the mucus glands of the pituitary membrane, lining the partition and shell of the nostrils Use, to preserve the nervous points of the smelling nerves moist, and to moderate excessive sensibility.

IN THE CAVITY OF THE MOUTH.

The Saliva.—A fluid secreted by the salivary glands into the mouth. The secretory organ is composed of *salival, under jaw,* and *under tongue* glands. Use, to augment the taste of the food; to mix with, dissolve, and resolve the food into its principles; and to moderate thirst.

IN THE CAVITY OF THE FAUCES.

The mucus of the fauces.—Secreted by the mucus glands of the throat, &c. Use, to lubricate the top of the throat.

IN THE EYES.

The watery humor of the eye.—The very limpid water which fills the front and back chambers of the eye. Secreted by the floating vessels of the eyelid, and exhaling vessels of the iris. Use, to distend the transparent cornea; retain the crystalline lens and vitreous humor in their places; and to transmit the focus of the rays of light to the crystalline lens.

The crystalline lens.—A clear, cellular body, distended by a very limpid, watery fluid, enclosed in a membranous bag, and situated in a depression in the front surface of the vitreous humor. Use, to transmit and refract the focus of the rays of light to the vitreous humor.

The vitreous humor.—The glassy substance which fills the whole bulb of the eye behind the crystalline lens; composed of small cells, distended with a limpid water. Use, to expand the bulb, and transmit and moderately augment the focus of the rays of light from the crystalline lens to the retina.

The water in the bag of the crystalline lens.—Secreted by the transparent branches of the artery of the crystalline lens. Use, to prevent the concretion of the crystalline lens with its bag.

The color of the iris.—The colored mucus which covers the front and back surface of the iris. Use, to reflect the rays of light.

The color of the enclosing membrane.—The black or brownish mucus which covers the front surface of the enclosing membrane, and the interior of the eyelash.

The Tears.—A limpid fluid secreted by the tear gland, and flowing on the surface of the eye. Use, to moisten the surface of the eye and eyelids.

The unctuous humor.—Secreted by the oily glands, and lubricating the fine cartilaginous rim of the eyelids.

IN THE CAVITY OF THE EARS.

The wax of the ears.—The soft, bitter wax, secreted by the wax glands of the external auditory passage. Use, to lubricate the sensible membrane of that canal, and to prevent insects from entering.

The water of the labyrinth.—An insipid water contained in the cavity of the drum. Use, to preserve the nervous fibrils of the ear nerve soft and moist, and to moderate the tremors of sounds.

IN THE NECK.

The juice of the shield gland.—Of a yellowish, white color, especially in infants. Use, not known.

The mucus of the gullet.—Secreted by the mucus glands, situated in the cellular membrane. Use, to lubricate the cavity of the gullet, and prevent the concretion of its sides.

IN THE CAVITY OF THE CHEST.

The mucus lining the internal surface of the windpipe, its branches, and the lung vessels. Secreted by the mucus glands situated under the internal membrane of those parts. Use, to prevent the surface of the windpipe, branches, and lung vessels from becoming dry by the continual passing of the air.

The vapor in the cavity of the chest.—A vapor which exhales from the exhaling vessels of the pleura, of the lungs and the ribs, into the chest. Use, to preserve the pleura soft, moist, and flexible; and to defend and prevent it from friction of, and concretion with, the lungs.

Vapor of the heart membrane.—Secreted by the arterious exhaling vessels which open upon the external surface of the heart, and internal of the membrane. Use, to prevent the concretion of the heart with the pleura; to diminish friction, and to preserve the parts soft.

The juice of the wart gland.—A milky juice secreted by the arteries opening into the cells of this gland. Use, not known.

IN THE BREASTS.

The milk of the breasts.—A white, sweetish fluid, secreted by the glandular fabric of the breasts of women. Use, to be aliment to new born children.

IN THE ABDOMEN.

The gastric juice.—A limpid colorless fluid, secreted by the exhaling vessels of the very numerous arteries which bedew every part of the stomach. Use, to digest the food.

The pancreatic juice.—The limpid juices secreted by this gland,

and conveyed through its excretory duct into the duodenum. Use, to assist in the formation of chyle.

Bile.—A yellowish green bitter juice, secreted by the glandular substance of the liver, and conveyed by the biliary ducts, in part into the duodenum, and in part into the gall bladder. Use, to extricate the chyle from the digested mass of food; to stimulate the intestines; and to prevent the abundance of mucus and acidity in the first passages.

Chyle.—A white fluid, separated from the food in the first passages, and observed some hours after eating in the milk vessels of the mesentery, and in the chest duct. Use, to form the blood.

The intestinal juice.—A limpid liquor, secreted by the exhaling arteries, in the whole course of the small and large intestines. Use, to assist in digestion; and to cleanse and moisten the intestines.

The mucus of the first passages.—Secreted by the mucus glands situated under the rough coat of the first passages. Use, to lubricate that canal.

The vapor in the cavity of the abdomen.—A watery vapor, secreted by the exhaling arteries of the lining membrane. Use, to preserve moist and prevent concretion of the abdominal viscera.

Urine.—A saline liquid, of a straw color, secreted in the kidneys, and dropping down from them by drops through the ureters into the bladder. Use, to liberate the body from superfluous water, &c.

The mucus of the bladder.—Secreted by the mucus glands situated under the innermost membrane. Use, to lubricate and defend the very sensible surface of the urethra against the acridness of the urine.

IN THE PARTS OF GENERATION IN MEN.

The mucus of the urethra.—Secreted by the mucus glands under the inner membrane. Use, to defend the urethra against the acidity of the urine.

The soap-like secretion of the glans penis.—An unctuous humor secreted by the oily teats on the surface of the glans and fore skin. Use, to lubricate and defend the sensible surface of the glans, and prevent its concretion with the fore skin.

The vapor of the sheath of the testicles.—The watery vapor, which exhales from the arteries into the cavity of the sheath. Use, to prevent the concretion of the testicles, and preserve them moist.

The liquor of the prostate gland.—A milky juice, separated by the arteries of the prostate gland, and sent through its ducts, in coition, into the urethra with the semen. Use, to serve as a vehicle to the semen.

The semen.—The prolific liquor secreted in the testicles, and carried through the little body and conveying duct into the seminal vessels. Use, to be emitted, under coition, into the female vagina, and there, by its spirit, or vivifying principle, to penetrate to, and impregnate the egg in the female ovarium.

IN THE PARTS OF GENERATION IN WOMEN.

The soap of the lips and fissure.—The unctuous juice secreted by

the oily glands, and covering the internal surface of the lips and nymphæ. Use, to lubricate their sensible surface, and prevent any irritation after discharging the urine.

The mucus of the vagina.—Secreted by the mucus glands, under the internal membrane. Use, to lubricate the vagina, lest it should be pained by friction, under coition, and to prevent the concretion of its sides.

The liquor of the cavity of the womb.—Secreted into it by the exhaling vessels. Its consistence, in the virgin womb, is serous and turbid; in the impregnated, milky. Use, to moisten the cavity, and prevent the concretion.

IN THE JOINTS.

The lubricating liquid.—An unctuous fluid, secreted by the internal membrane of the cap ligaments surrounding the joints. Use, to lubricate the cartilaginous surfaces of the articulating bones, and facilitate their motions.

Juice of the mucus bags.—An unctuous juice, secreted by the vessels of the internal membrane of the mucus bags. Use, to lubricate the tendons for motion.

IN THE BONES.

The marrow of the bones.—The oily substance secreted by the arteries of the internal bone membrane, and contained in the marrow cavities of the long bones, and spongy substance of others.

FLUIDS OF THE COMMON INTEGUMENTS.

The coloring mucus.—The mucus situated between the skin and scarf skin of the whole body, and secreted by the arterious vessels of the skin. Use, to glue the scarf skin to the skin; to moderate the sense of touch; to moisten the nervous points; and give the external color to the body, hence, it is *white* in Europeans, black in Ethiopians, &c.

The oil of the fat membrane.—Secreted by the arteries of the cellular membrane. Use, to facilitate muscular motion.

Sweat.—The watery perspirable matter excreted through the exhaling arteries of the skin. Use, to keep the skin moist.

SURGERY.

The following observations on surgery are principally condensed from the works of Benjamin Bell. The treatment of inflammation, ulcers, abscess, &c. which generally come under the head of Surgery, are here omitted, as they are considered in the practice of physic.

BLEEDING.

No operation of surgery is so frequently necessary as bleeding; it ought therefore to be very generally understood. It is an operation of great importance, and must, when seasonably and properly performed, be of singular service to those in distress. Bleeding, in the asthma, apoplexy, epilepsy, inflammation or pressure of blood upon the brain; and after falls, blows, bruises, or any violent hurt, received either externally or internally, is generally necessary. It is likewise necessary for persons who have had the misfortune to be strangled, suffocated, or drowned: In a word, whenever the vital motions have been suddenly stopped, from any cause whatever, except in swoonings, occasioned by weakness or hysteric affections, it is proper to open a vein. But in all disorders proceeding from relaxation of the solids, and an impoverished state of the blood, as dropsies, &c. bleeding is very improper.

Bleeding for topical inflammation ought always to be performed as near the part affected as possible. When this can be done with a lancet it is to be preferred to any other method; but when a vein cannot be found, recourse must be had to leeches or cupping.

The quantity of blood to be taken away must always be regulated by the strength, age, constitution, manner of life, and other circumstances relating to the patient.

The mode of bleeding most commonly practised, is that of opening a vein; and it may be done in the arm, ancle, jugular vein, and under the tongue, and on the back of the hand. In whatever part it is performed, a bandage must be applied between that part and the heart. As it is often necessary in order to raise the veins to make

the bandage pretty tight, it will be proper in such cases, as soon as the blood begins to flow, to slacken it a little. The bandage ought to be applied at least an inch or an inch and a half from the place where the puncture is intended to be made. Thus the return of the blood through the vein is stopped, the vein swells, becomes conspicuous, and when opened, bleeds much more freely than would otherwise happen.

Unskilful persons ought never to bleed with the lancet in a vein that lies over an artery or tendon, if they can avoid it. The former may easily be known from its pulsation or beatings, and the latter from its feeling hard or tight under the finger.

It was formerly a rule, even among those who had the character of being regular practitioners, to bleed their patients in certain diseases till they fainted. [See Rush.] Surely a more ridiculous rule could not be proposed. One person will faint at the sight of a lancet, while another will lose almost the whole blood of his body before he faints, Swooning depends more upon the state of the mind than of the body; besides it may often be occasioned or prevented by the manner in which the operation is performed.

All the apparatus essential for blood letting on the part of the patient, is a bandage, two or more small pieces of linen for compresses, a basin to receive the blood, and a little clean water and a towel. The bandage ought to be about a yard in length, and near two inches broad, a common riband or garter being frequently employed. The compressess are made by doubling a bit of linen rag about two inches square. On the part of the surgeon, it is necessary for him to have a good lancet of proper shape, for if the shoulders of the lancet be too broad it will not readily enter the vein, and when it does enter, it invariably makes a large opening which is not always desirable. If the lancet be too spear-pointed, an incautious operator would often run the risk of transfixing the vein and wounding the artery beneath. More, however depends on the mode of introducing the lancet than on its shape.

During the operation of bleeding, the patient may lay down or stand up, as circumstances may require. A sitting posture, however, is to be preferred, as the most convenient both for the surgeon and the patient.

At the bend of the arm there are several veins in which a puncture may be made. The largest and most conspicuous is that in which the operation is mostly performed; but, it should not be forgotten, that it is immediately under this that an artery runs which, without great care, might be easily transfixed.

The vein being made choice of, the surgeon, if he use his right hand in the operation, he must take a firm hold of the patient's arm with his left, and with the thumb or finger of the same hand he must now press upon the vein just above where you intend the incision, so as to confine and prevent its rolling. The operator must now take the lancet between the thumb and finger of his right hand, with half the blade uncovered, and rest his hand upon the remaining fingers. He will now push the point of the instrument freely through the skin and teguments into the vein, then carry it forward in an oblique direction till the orifice is of a proper size; taking care

to keep the point of the lancet, in as straight a direction as possible, to prevent its injuring the parts below. The instrument may now be withdrawn, the thumb removed, and the vein allowed to empty itself.

The entry of the lancet into the vein may be readily known by the resistance to its progress being diminished.

In fat subjects, the large veins at the bend of the arm are sometimes totally imperceptible, notwithstanding the fillet is tightly applied. Under these circumstances it may be well for the surgeon to content himself with opening one of the veins of the back of the hand, after putting it for some time in warm water, and applying a ligature around the wrist.

One of the most common ill consequences of bleeding in the arm is, a small tumor round the orifice, and occasioned by the blood insinuating itself into the adjoining cellular substance, at the time this fluid is escaping from the vein. Changing the posture of the arm will frequently hinder the tumor from increasing in size, so as to obstruct the evacuation of blood. The best applications for promoting the absorption of these tumors, are those containing spirit, vinegars, &c. Compresses wetted with any lotion of this sort, may be advantageously put on the swelling and confined there with slack bandage.

Topical blood-letting.--This is performed either by means of a scarificator and cupping-glass, or leeches, or by dividing the visibly distended vessels with a lancet. This species of blood-letting is used when, either from the severity of local inflammation, or any other course, we wish to take blood directly from the vessels of the part affected.

In applying leeches, the most effectual way to make them fix, is to allow them to creep a few minutes upon a dry cloth or dry board; then apply them to the spot and confine them with a small wine glass; or moisten the part with milk, cream, or blood. As soon as the leeches have come away, to promote the discharge of blood the parts may be wet with cloths dipped in warm water.

WOUNDS.

No part of medicine has been more mistaken than the treatment of wounds. External applications contribute very little towards the cure of a wound, in any other way than by keeping the parts soft, clean, preventing inflammation, and defending them from the external air. It is Nature alone that cures wounds. All that art can do is to remove obstacles, and put the parts in such a condition as is most favourable to Nature's efforts.

With this simple view we shall consider the treatment of wounds, and endeavor to point out such steps as ought to be taken to facilitate their cure.

The first thing to be done when a person has received a wound, is to examine whether any foreign body be lodged in it, as wood, stone, iron lead, glass, dirt, bits of cloth, &c. These, if possible, and it can be conveniently done, ought to be extracted, and the wound cleaned before any dressings be applied. When that cannot be

effected with safety on account of the patient's weakness or loss of blood, they must be suffered to remain in the wound and afterwards extracted when he is more able to bear it.

In incised wounds, the divided parts should be brought together as exactly opposite to each other as possible; for parts recently divided, will unite together, if kept in contact for a sufficient length of time. To retain them in contact, bandages, adhesive plasters, or the needle and thread are necessary. Bandages, or adhesive plasters, may be used when the wounds are superficial; but in all wounds that penetrate to any depth, and when their edges can be drawn into contact, sutures or ligatures are necessary, to support the parts with certainty. We should also support the parts as much as possible by the posture of the patient. When these are done, no other dressings are necessary than some soft lint, which, to exclude the air, should be spread with some unctuous substance.

Inflammation, to a certain degree in incised wounds, is necessary to produce an adhesion of the sides: yet an excess of inflammation is productive of much harm. In open wounds the most effectual relief for this excess of inflammation, are poultices, as of carrots, onions, bread and milk. In closed wounds, my "anodyne wash" may be used to great advantage. But if, notwithstanding our endeavors, the pain and inflammation increase, the plasters and ligatures must be removed, and the cure attempted in the common way.

Generally, however, the cure goes on without any interruption of this kind; and as soon as a firm degree of adhesion has taken place between the edges of the wound, we may remove the ligatures, or other means of retention. In this method of cure, the dressings should be seldom removed, unless it should appear necessary.

In those wounds which do not admit of this mode of treatment, when the edges cannot be drawn together, after the flow of blood is stopped, and extraneous bodies removed, we find by experience that the most effectual assistance we can render, is, to promote the formation of matter; for in wounds of this kind, a free suppuration proves the most effectual relief to every symptom. The healing process never begins in a sore of the kind till it is covered with good pus. Nature alone performs the cure in such cases, and all we can do is to remove obstructions to her operations, and protect the injured parts till the cicatrix becomes sufficiently firm.

As a general rule in regard to dressing sores, it should always be done whenever they are plentifully covered with matter. When the cure of a wound goes on favorably, the same kind of dressing should be continued as the first. Nothing proves more hurtful to sores than exposure to the air; the dressings, therefore, should be changed as seldom as is consistent with cleanliness, and likewise quickly done. Another general rule may also be laid down, as long as the cure continues to advance, mild dressings should be used; but when the sore assumes any fungous or morbid appearance, more powerful dressings, as the green salve, become necessary, to restore it to a good condition.

In some cases, from a diseased condition of the fluids, wounds may be very difficult of cure by external means; we should then use internal cleansing medicines.

Lacerated and contused wounds—Differ from simple incised wounds in being more hazardous. When the texture of the parts is much destroyed, there is great danger of mortification or gangrene ensuing. In sound constitutions, this will not often prove fatal, for in such circumstances the mortified parts soon fall off, and a cure is accomplished in the common way. But in wounds of considerable extent, if the habit of body is not perfectly good, the gangrene which ensues is always hazardous. Again, in severe wounds of this kind, the inflammation often takes hold with such severity as terminates in mortification; this is always dangerous. We should, therefore, in our treatment, guard against these two terminations, particularly.

If a moderate discharge of blood shall have taken place from the wound, it is no disadvantage. It tends to prevent the inflammatory symptoms from running high. In dressing, the parts should be placed as much as possible in their natural position. Warm poultices and formentation should be used in order to promote the formation of pus, as that event relieves all the symptoms. If mortification threatens, the proper means to prevent it, as charcoal and yeast, &c., and such other means as the judgment of the practitioner shall direct.

AFFECTIONS OF THE BRAIN FROM EXTERNAL VIOLENCE.

1*st. Compression.*—The most remarkable symptoms indicating a compressed state of the brain, are: giddiness, dimness of sight, stupefaction, loss of voluntary motion, vomiting, stertorous breathing, dilatation of the pupils, involuntary evacuations, oppressed and irregular pulse, and when the violence has been considerable, a discharge of blood from the nose, eyes, and ears.

Some of the milder of these symptoms, as vertigo, stupefaction, and temporary loss of sense are frequently induced by slight blows, producing a shock or concussion of the brain; in which case the symptoms generally soon disappear.

Compressions of the cavity of the skull may happen in several ways; by fractures, attended with depression of the bones; by the effusion of blood, serum, pus, or any other matter; and likewise by the the thickening of the bones of the head, as sometimes happens in the venereal disease.

Fractures of the skull are either attended with depression, or not; in the latter case they are of little comparative consequence. When the symptoms of compression are present, it becomes the surgeon's duty, first, to discover as exactly as possible the site of the fracture; and secondly, to relieve the pressure by elevating or removing the depressed parts of the bone.

We may generally discern the seat of the fracture by pressing upon the head, and wherever it excites the greatest pain we may conclude that there is the point we wish to find. We should then examine the state of the cranium, by making an incision with a scalpel through all the external coverings of the skull, and laying the bone bare. This should be done with caution, otherwise the brain may be hurt; and as the intention of this operation is to bring the injured

parts into view, the incision should be made sufficient to effect this object.

The exact situation of the depressed part of the bone next requires attention. In some cases we find it entirely separated from the rest of the skull; in others, it adheres at two points; whilst in some a fissure is discovered, with one side of the bone beat below the level of the other.

When a portion of the skull is broken into several pieces, it may be well generally to remove them, as they would never probably unite. In such cases the broken and detached portions of bone may for the most part be easily taken out with common forceps. But when only one piece of a bone is depressed, and this adheres on one or more sides to the contiguous bones, we may attempt to replace it. This may be done in some cases with a lever, or bodkin, introduced into the sides of the fissure; or by means of a screw, perforating the skull and forming a handle wherewith to raise it, when the introduction of it will not require too great a pressure upon the brain. The manner of elevating the bone, however, must be decided by the judgment of the surgeon, on an examination of the case.

But it sometimes happens, even when several portions of the bone are beat in, and very commonly when the depression is formed either of one piece entirely separated, or of a portion of the skull forced in upon the brain, without any of it being altogether detached, that the depressed pieces cannot be either removed, or raised to a level with the rest of the skull in any other manner than by making one or more perforations in the contiguous sound bone, for the purpose of introducing an instument, or lever, in order to elevate the depression. It is for this purpose that the trepan is employed: hence, it is evident that the operation can never be necessary when the depressed pieces can be removed in the manner I have mentioned.

The operation of trepanning may be performed more safely and advantageously in some parts than in others, on account of unevenness, or projections on the inside of the skull, or arteries of the inner membrane. The parts we should avoid, if possible, are the under part of the side bones; the under part of the occipital or hinder bone of the head; the lower part of the frontal bone; and the whole course of the longitudinal canals, on the top of the head.

The instruments in common use for this operation, are: a scalpel, or a raspatory, for the removal of the bone membrane; a perforator; a trepan; forceps; and an elevator.

In proceeding to the operation, the patient should be laid upon a table of a convenient height, with his head firmly secured by assistants: this being done, a sufficient portion of the skull should be laid bare to admit of the perforation, and no more; and this should be done exactly at that point where the greatest resistance seems to be to the elevation of the depressed piece of bone. We may also include in the trepan a small portion of the fracture or fissure, taking care however, that the broken part be not depressed. All things being ready for the operation, a small hole should be made in the undepressed bone with the perforator, sufficiently large for receiving the point of the pin in the center of the circular saw, or trepan, which should be inserted into it, thereby preserving the saw *firmly*

in one place, till a groove is cut sufficiently deep to retain it, when the pin should be removed. The surgeon should now proceed to finish the operation, by pressing on the instrument with moderate and equal firmness; at the same time using great caution that it does not pass through too suddenly upon the brain, or from the unevenness of the skull, that we do not injure the brain on any side. For this purpose the instrument should be frequently taken out and the depth of the cut examined with a probe, or sharp pointed quill; and at the same time the cut should be cleared of the particles of bone, and blood, and the instrument cleaned.

When the instrument has reached the soft substance between the two tables of the skull, the frequent cleansing of the saw becomes more necessary, as the blood and spongy bone considerably obstruct the operation. After the diploe, or soft layer, is passed, caution becomes much more necessary; and in proportion to the progress of the saw it should more frequently be removed, and examinations made. As soon as the probe can pass through at any part of the cut, the pressure should be removed from this point. By proceeding in this cautious manner, the bone soon becomes loose in different points, and may be easily removed with the forceps or the points of the two levers applied under it. After the piece of bone is removed, if any splinters or points are found to remain, they may be taken out with forceps.

The depressed bone may now be elevated to its former position with an elevator or lever, applied under it; or it may be entirely removed with the forceps, according as its connexion with the surrounding bones is more or less broken. If, however, in consequence of its being still wedged in at another point, the trepan must be again applied, and another perforation made, before any considerable attempt is made to remove it.

As the great object of this operation is to remove every cause of compression upon the brain, we should be particularly careful that this is as perfect as we can make it before we desist. At the same time, the removal of any blood or serum from the surface of the inner membrane, is equally necessary. These being done, the wound should be immediately dressed and the patient laid to rest.

In regard to dressings: they should be of the mildest kind, and as loosely applied as possible. Dry lint is commonly employed; but it excites less irritation and is more easily removed, when thinly spread with a simple liniment of wax and oil; and no detriment ensues, as some have imagined, from the application of unctuous substances to the brain. No tent or dossil should be inserted into the perforation; all that is necessary is to apply as lightly as possible a lock of soft lint, spread with an ointment, as I mentioned; and this being covered with a thin cushion of soft tow, the whole should be retained with a common night cap, brought to a proper tightness. This supports the dressings with sufficient firmness, and neither keeps the head too tight, nor prevents a free flow of matter from the sore.

When the symptoms under which the patient has labored have arisen entirely from a depressed portion of the bone, and when this depression has been completely removed, we commonly find that immediate relief is derived from the operation. The torpidity, labor-

ous breathing, &c., go off gradually: he begins to toss about in bed, raises his eyelids, and makes some feeble attempts to speak. But if these favorable circumstances do not appear immediately after the operation, we are not to despair of success; for when the brain has been long compressed, it does not always recover its functions immediately. Besides, it often happens that the brain has received a violent shock or concussion, in which case the symptoms do not depend entirely on the compression. Two causes, viz.: inflammation of the membranes of the brain, and concussion of the brain itself, may yet interfere and render the cure more doubtful than ever. A surgeon ought not, therefore, to imagine that all his business is over when the operation is finished.

If, after all the evident causes of compression are removed, the pulse is slow and soft, if the patient remains torpid, and especially if the pupils do not contract on exposure to light, there is much cause to suspect that a concussion of the substance of the brain has taken place. But, when, instead of these symptoms, there is some return of sensibility, as is indicated by the patient's becoming unmanageable and moving from one part of the bed to another; if the pulse become full, firm and quick; if the eye appears inflamed and the pupil contracts strongly in the light; we may suspect that inflammation of the membranes of the brain has taken place. These membranes are susceptible of inflammation to a remarkable degree; and where it is once induced it extends over the whole of them with rapidity; a circumstance that easily accounts for the high degree of inflammation which is often observed in the eyes, and the severe degree of pain which their exposure to much light in this situation never fails to produce.

When inflammation is found to have taken place, blood-letting becomes requisite, together with blisters, smart purgatives, mild sudorifics, and low diet. But when the symptoms appear to arise from concussion, the only evacuation that should be advised is gentle purging; for in this case, blood-letting certainly does harm. In both situations, the patient should be kept perfectly quiet, excluded from the light, and his food of the mildest kind, together with diluent drinks.

In the mean time, the state of the wound requires particular attention; for after the operation the membranes of the brain are liable to inflame and become gangrenous. Nothing so certainly prevents this as a free suppuration upon the injured parts. With this view, warm emollient poultices and fomentations should be applied over the dressings, and renewed every two or three hours, which soon promote a plentiful flow of matter from the perforations of the skull, remove the tension and render the symptoms less violent.

At every dressing, the matter resting in the perforations should be removed with a piece of soft sponge or lint, and then the sore speedily covered with a pledget of any mild ointment.

When the cure goes on properly granulations soon appear upon the dura mater, or lining of the inside of the skull, as well as on the rest of the wound; and these continuing to advance, the different openings made by the trepan are at last completely filled up, and the whole being brought to a level with the rest of the teguments, a cicatrix may be formed.

These granulations, however, instead of merely filling up the vacancy, in some cases push out beyond the surface so as to form pendulous tumors. But in general, these tumors begin to diminish as soon as the soft granulations in the perforations of the skull begin to acquire a firmer consistence; and when the ossifying process is completed, they are in a manner cut off, and fall of their own accord.

Compression of the brain from extravasation.—By whatever cause the brain may be compressed, the symptoms that ensue are nearly the same. I shall only observe therefore, that all the symptoms arising from a compressed state of the brain, are produced with an equal certainty, and attended with as much hazard, from effusions of blood, serum, or pus, as from the most extensive depressions of the bone; and in general are more to be dreaded; for where the bone is broken or depressed, the point of injury is easily known; whereas in mere extravasation the seat of the collection cannot be known with any certainty.

In compression of the brain from extravasation, we have the same object in view, with that which a depressed portion of the skull renders necessary; having endeavored to ascertain the seat of the injury, we are to make one or more perforations, in order to discharge the extravasated fluid. The chance of benefit from an operation in this case, will not, indeed, be great; but as it is the only chance of saving life, in severe cases, we are certainly justifiable in the attempt.

After the skull is perforated the effusion may be found to be below the dura mater, or even within the second membrane, and in contact with the brain. This may be known by its being of a dark or livid color, very tense, and elastic. This collection, when found, ought certainly to be discharged, as unless this is done, the intention of the operation is not fulfilled, although the chance of success is diminished. The safest mode of opening the dura mater, is to scratch a small hole by repeated strokes of the lancet. If the matter is then found to be below the inner membrane, that must be opened too in the same manner, till the matter is discharged; for unless we go this length, we in fact do nothing; although we must be aware that we do it at the risk of protrusion of the brain and fatal hemorrhages.

Fissures or simple fractures of the skull.—Injuries done to the head are hazardous only in proportion as they affect the brain; so that when the skull is merely cracked, without violence to the brain, it cannot be considered dangerous. Fissures commonly heal without any bad symptoms taking place; but they may prove dangerous, either from producing effusions of blood, or by exciting inflammation in the membranes. In either of these cases the surgeon, from what has been before mentioned, will be enabled to guide his practice.

Conclusion.—The importance of this subject, and the length to which this treatise has extended, would render it proper perhaps, to avoid perplexity, to bring the material points into one view. I have therefore subjoined the following recapitulation:

We are to recollect, in the first place, that, in a state of health, the cavity formed by the bones of the skull is completely filled by the brain and its membranes; that a direct communication takes place between the external coverings of the skull and the parts contained within it, by means of blood vessels passing through the skull at

the different sutures :—From which we may perceive how the smallest diminution in the cavity of the skull, however it is produced, must always occasion compression of the brain ; and also we may account for the ready communication of the inflammation from the external to the internal membranes of the skull.

The various symptons arising from injuries done to the head, may be referred to three general effects : compression, concussion, and inflammation of the brain.

In a compressed state of the brain, the safety of the patient depends solely upon the removal of the cause. When a portion of the bone is beat in, and at the same time so loose as to admit of its being taken out with the fingers of the operator, with common forceps, or with the lever or bodkin, these only should be employed ; but when the depressed portion of the bone is firmly fixed, or when the compression is produced by the effusion of blood, or the formation of pus, a proper application of the trepan alone can afford relief ; and we ought not to hesitate in employing it.

In such circumstances, the patient is in a very hazardous situation ; and perforating the skull with the trepan as frequently as may be necessary, may prove, as it often has done, a very effectual remedy.

We are by no means, however, to imagine, as many have done, that a surgeon has accomplished all that may be proper for him to perform, on the operation being finished. Indeed, little advantage will be derived from it, in general, unless other circumstances are kept in view. As the membranes are always injured more or less, care should be taken to obviate the effects of it. Nothing should be crammed into the perforations made by the trepan, and every irritating application should be avoided The whole surface of the sore should be lightly covered with soft lint spread with any emollient ointment ; and this with a compress of soft linen, should be retained with a common night cap, as the easiest and best bandage that can be applied to the head. The patient should lose blood in proportion to his strength ; his bowels should be kept open ; his skin should be preserved soft and perspirable ; a low diet should be recommended ; and he should be kept free from noise and every kind of disturbance.

When symptoms arising from external violence done to the head, depend on concussion or commotion of the brain ; as this seems to operate chiefly by inducing debility of the whole system, the common practice of discharging much blood and giving strong purgatives, should be avoided.

Instead of this, a moderate use of wine, as well as other cordials, should be advised, together with a nourishing diet ; while blisters and other stimulants, should be applied to the head or neck. In long continued affections proceeding from this cause, such as loss of memory, imbecility, &c., electricity may be safely employed.

In the treatment of injuries done to the head, it should always be kept in view, that inflammation of the membrane of the brain very seldom takes place immediately, but is apt to come on at some distant period from the injury being received ; in consequence of which, accidents, which do not at first appear to be of much importance, frequently terminate fatally at last.

Where inflammation has taken place, we depend chiefly upon general and local blood letting, carried as far as the strength of the patient will permit. Strong purgatives should be advised; sudorifics are serviceable; cooling and anodyne applications to the head; and when the patient is restless and distressed with violent pain, opiates frequently prove useful.

When an inflamed state of the brain succeeds to a contused wound of the external teguments, warm emollient poultices are the best applications we can make to the sore. By inducing a discharge of matter from the neighborhood of the inflamed parts, they often prove highly serviceable; and when the skin has not been divided by the contusion, it should be laid open upon the first appearance of a tumor, without expecting or waiting for a complete suppuration.

THE HARE LIP.

Children are often born with fissures in one of the lips, particularly in the upper lip. This is termed a hare lip, from its resemblance to the lip of a hare.

This fissure or separation is generally confined to the lip itself; but it often extends back along the whole course of the palate and into the throat.

Every degree of the hare lip gives much deformity, and sometimes prevents the child from sucking: it always produces some impediment of speech; and when the division extends along the bones of the palate, the chewing and swallowing is incommoded by the food passing up the nose. When it is in the under lip, the spittle cannot be retained.

For these reasons, an early removal of the hare lip should be attempted. In a healthy child, the operation may be performed any time between the third and thirteenth month, which I consider as favourable a period as any.

The intention of the operation in the hare lip is to cut off the sides of fissure, so as to reduce the whole to the state of a recent wound, and then to draw them together and retain them in contact till they unite. In effecting this, bandages, adhesive plasters, ligatures, &c. are sometimes made use of; but they are not certain, and when they fail, the difficulty is rendered worse. To avoid all uncertainty and disappointment, therefore, we should make use of pins, in the manner I shall hereafter describe.

In proceeding to the operation, the patient, if an adult, should be seated opposite the light, with his head properly held by an assistant; if a child, he will be more firmly secured if laid on a table, and kept in a proper posture by an assistant on each side.

The upper lip should now be completely separated from the gums beneath, by dividing the frenum that conjoins them. This admits of the lip being more equally stretched. These preparatory steps being adjusted, the surgeon must take one side of the lip between the thumb and forefinger of his left hand, and desiring an assistant to do the same with the opposite side, stretching it somewhat tightly, he should with a scalpel make an incision from the lower edge of the lip to the upper extremities of the fissure; cutting off all

the parts concerned in the fissure, and even a small portion of the contiguous sound parts. The same must then be done on the other side, which ought to be of the same length and terminating in the same point with the other. By this means, if the operation is rightly done, a piece will be cut out of the form of the letter V inverted.

To prevent inflammation, the divided arteries should be allowed to discharge freely; and this being done, the surgeon should proceed to unite the sides of the fissure. The surgeon is now to see that the two sides of the cut correspond exactly together; and this being done, the pins intended to support them in this position, should be introduced. The first pin should be near to the lower edge of the lip. In adults, another pin should be inserted across the middle of the cut, and a third near to the upper angle of the cut. In adults three pins are always sufficient, and in infants two will commonly answer. In passing them they should be made to enter nearly half an inch from the cut, and passing through the whole substance of the lip, brought out at an equal distance on the other side. The assistant should now push forward the cheeks, and having brought the edges of the wound together, a firm waxed thread should be wound around the ends of the pins and over the lips, crossing the pin so as to describe the figure 8; commencing with the lower pin, and after passing two or three times round it; carrying it to the next pin, and so on, till the whole is finished; taking care to draw it to such tightness as to confine the parts in contact, and no more.

A piece of lint covered with some soft sticking substance, should now be applied over the cut to protect it from the air, and also over the ends of the pins, to prevent them from being entangled with the bed clothes, &c. It may be well also, to keep the cheeks pressed up with a bandage, to prevent irritation from the pins.

It is scarcely necessary to observe, that while the pins are in the lip, the patient should be fed upon spoon meat, and be prevented from laughing, or crying, or stretching his mouth in any manner.

The pins having remained in the lip five or six days at farthest, they should be taken out; as the parts are by that time united, and by remaining longer they are apt to create marks.

I would here mention, that in order to prevent an unseemly scar in the healing of any wounds, I have found the application of whale oil to very effectual.

The incision for the cutting off the edge of the hare lip, may also be done with a pair of strong and firm scissors; and perhaps this method would be attended with less pain, because it could be done quicker.

The pins, or needles, used in this operation should be of silver or gold, and large enough to be sufficiently firm for the purpose. The points should be spear shaped and made as sharp as possible. But perhaps it would be better to have moveable steel points upon the pins, which can be removed after the insertion.

What I have hitherto said relates to the disease in its common form. In the case of a double hare lip, the operation requires to be performed twice in all its parts; first in one fissure, and then in the other. This should be done at different periods of time, and never attempted in the one, till the other is safely healed up.

RUPTURE, OR HERNIA.

A rupture takes place where the muscular walls or covering of the abdomen give way in any part, and a portion of the contents are protruded, forming an external tumor. The parts most liable to rupture are the groin, scrotum, the labia in women, the upper and forepart of the thigh, and the navel. These tumors generally contain a portion of the caul, or fatty substunce about the intestines, or of the small intestines themselves, or of both.

This protrusion of a portion of the bowels is not in consequence of the actual rupture or laceration of the parts, but of their extension or elongation into a sac. For there are several weak points, called rings, in the muscular covering of the belly, which are only defended by a thin membrane; and it is in these points that the protrusion happens. The principal of these rings are two, one above each testicle, and it is through these that the testicle descends from the abdomen of the male child into the scrotum, at about the eighth month. There are also other rings for the passage of the blood vessels into the thigh and at the navel.

It may be supposed from the above description, that upon the descent of the testicle in infants, and before the passage is sufficiently contracted, a portion of the intestines may very easily slide down with the testicle into the scrotum. This, therefore, frequently takes place in infants, and is called congenital hernia. In this case, if the gut, or other parts which have fallen down, are again pushed into the abdomen, and retained there with a truss, the passage soon fills up, and no return of the hernia takes place. But if this is neglected for some time, the passage loses all disposition to close up, and the cure rendered almost impossible.

We have now seen in what manner hernia takes place in infants. We shall now inquire into the causes of hernia in its usual form.

The muscular coverings of the abdomen are elastic and compressible; whatever, therefore, tends by compression to lessen the cavity of the abdomen, must occasion a proportional risk of some of the contained parts being pushed from their natural situation. The abdominal muscles and diaphragm are excited to severe contraction by various causes, particularly by violent coughing, crying, laughing, lifting, or any severe bodily exertion, which contracts the muscles. Violent falls or shocks, may also cause it.

Persons of a preternatural laxity of frame are very liable to ruptures. Those who use oil as food, are more liable to it than others.

On the first appearance of hernia, the sac is commonly small, for the protrusion seldom becomes large at once; but by repeated descents, the sac is pushed lower and lower, till by several descents it acquires considerable bulk. Sometimes a hernial swelling is unattended with bad symptoms. In general, however, it is otherwise; and when the reduction of a hernia can be accomplished, it ought always to be done as quickly as possible.

All the bad symptoms arising from a rupture, proceed either from obstruction to the passage of the fæces, when a gut is pushed out; or from a stoppage of circulation occasioned by stricture on the pro-

lapsed parts. When the stricture is so complete as to put a stop to the circulation in the protruded parts, mortification, with all its bad consequences, must arise, together with vomiting, hickup, and other symptoms of distress.

Whenever a stoppage of circulation takes place in the contents of a rupture, either of the blood or contents of the intestines, the following symptoms take place: an elastic colorless swelling is observed at the part affected; a slight pain is felt in the tumor, and if the gut is down, uneasiness is felt over the whole abdomen, and the pain is rendered worse by coughing, sneezing, &c. The patient complains of nausea, retching; he can get no discharge by stools; becomes hot and restless, the pulse hard and quick. Whether the gut is down, or merely the caul or omentum, can mostly be ascertained by the feeling.

If the symptoms of a strangulated gut are not soon relieved by the stricture being removed, bilious vomitings of fœtid matter come on; the belly becomes tense; the pain and fever more violent, a distressful hickup takes place, and the patient is very anxious and restless. These symptoms having gone on for some time with violence, the patient is apt at last to be suddenly relieved from the pain, when he flatters himself that every risk is at an end; but instead of this, the pulse becomes languid and interrupted; cold sweats break out upon the body and extremities; the eyes become dull; the tenseness of the abdomen subsides, the tumor partly disappears, and the skin of it becomes livid.

If the protruded parts have not of themselves gone entirely up, they may now be easily returned with a gentle pressure, and the patient then discharges freely by stool; but the cold sweats increasing, the hickup turns more violent; and death itself is at last ushered in by its usual forerunners, twitching of the tendons, convulsions, &c.

These are the ordinary symptoms of what is termed a strangulated gut rupture, when the protruded parts cannot be returned to their natural situation.

We will now proceed to consider the most effectual means of relief in this distressing and dangerous disorder: and these may be comprehended under two general heads, viz.:

I. Such as tend to the reduction of the protruded parts, without the interposition of any surgical operation, so called; and,

II. A division of the parts producing the stricture, so as to admit of a replacement of the deranged viscera, constituting what in general is called the operation for hernia.

The remedies to be employed for the first of these are, a proper posture of the patient, with the manual assistance of a practitioner; blood letting; stimulating glysters; opiates; the warm bath, and proper applications to the tumor itself. The first thing to be done is to place the patient nearly perpendicular, with his head downwards, which will cause the bowels to swing or hang by the protruded parts, and frequently proves the means of reducing them; or the patient's feet may be placed over the shoulders of another person, with his body hanging downwards, and in this posture jolted about, which

has in some instances answered, when every other means have been tried in vain.

The surgeon should, in the meantime, endeavor to assist the return of the protruded parts by gentle pressure with his hands and fingers. If the swelling is large he may grasp the bottom of it with one hand, crowding upwards, while with the fingers of the other he may work the contents through the stricture: however, this must be managed by the judgment of the practitioner, taking care, at the same time, to avoid creating pain, and use no force.

If these means fail, others must immediately be resorted to; of which blood letting should, perhaps, be the first, and in a large quantity, thereby relaxing the muscles. Injections of tobacco smoke are often beneficial. We should continue to throw them up till they produce the desired effect, or till sickness is induced, and the abdomen considerably distended. If tobacco smoke does not prove useful as a purgative, it does as an anodyne, so it cannot be given amiss in this case. Opiates are useful, by relieving pain and relaxing the constricted parts. The vomiting, however, sometimes prevents their being used. Immersion of the whole body in a warm bath, is also very useful, by relaxing the whole system. Cold applications to the tumor, as snow, ice, or salt, and in particular, my "anodyne wash," are advantageous.

By these remedies we sometimes succeed in the reduction without any further trouble; but it frequently happens, notwithstanding every attempt, that the protruded parts cannot be returned; the symptoms, instead of abating become more violent; and the event of the disorder more doubtful

In this situation we should again endeavor to return the contents of the tumor; by a pressure with the hand, assisted by the posture of the patient; but when this does not soon prove successful, a division of the parts by which the stricture is produced, should be advised as our only resource.

The operation for hernia is no doubt liable to some hazard; but as the danger from the operation itself is trifling when compared with the risk accruing from delays, it ought to be used as a last resort; not, however, till every means of reduction the practitioner knows of, or can devise, have been tried without effect. But when all these fail and the symptoms grow more alarming, there cannot be much room for hesitation.

If we have succeeded in returning the tumor, it should be kept in its place by a truss, continually worn. Of these, Hull's, or Bateman's, are, perhaps, as good as any now in use. I have also found that porcupine's oil applied to the part is an excellent preventative of a relapse; it strengthens the muscles and contracts them to their original position. Neat's foot oil is also good for that purpose.

The parts liable to rupture, are also liable to other tumors, as bubo, swelled testicles, and various kinds of chronic and dropsical enlargements of the scrotum. Care should be taken, therefore, to distinguish them; which is in most cases easily done. The bubo is known by its hardness; the enlarged testicle, by its being hard and painful to the touch; and the dropsical swelling, by its beginning at the bottom of the scrotum, instead of the top; the tumor is more equal than in hernia, and the fluctuation of a fluid is distinguishable.

When, however, an operation for a scrotal hernia becomes necessary—(and I would here remark, that I have never yet found a case in which I was obliged to resort to it; having always succeeded, even in very severe cases of strangulation in quelling the inflammation, and of course reducing the rupture, particularly by means of the "anodyne wash" applied with cloths, or a cold poultice of sal amoniac, vinegar, and yeast)—the patient should be placed on a table of convenient height, and in a proper light, with his buttocks somewhat raised, as also the thighs, so as to relax the abdominal muscles; and the legs separated, that the operator may stand between them. Previous to the operation the patient should empty his bladder, and the parts be shaved. The operator should then grasp the tumor on the under side with his left hand, so as to make the forē part tense and steady, while with the scalpel in his right, he divides the skin from one end of the tumor to the other.

The sac being laid bare, an opening must be made into it so as to bring its contents to view; this may be done as near to the under point as possible, as there is less danger of wounding the gut. In making this perforation of the sac, consists the greatest nicety in the operation, the utmost caution being necessary to avoid injuring the parts. Good eyes and a steady hand are in no operation more requisite than in this, as well as a correct knowledge of the anatomy of the parts.

The operator must proceed slowly with the scalpel, dividing one fibre of the sac after another, till an opening is made through, which may be discovered with a probe. A director should then be introduced to cut upon, and the cut enlarged so as to admit the finger of the operator. The fore finger should now be introduced and used as a director for entering a narrow probe-pointed knife, with which the sac must be divided along its whole length up to the opening in the belly.

On laying the sac open at the bottom, a quantity of colored fluid commonly rushes out, and the protruded parts come fully in view. They should be examined with the nicest attention, in order to discover whether they are sound or not; and if they appear to be so, that is, not gangrenous, even though they seem inflamed, they should be immediately returned into the abdomen.

If we cannot now, by the use of proper means, return the protruded parts, when the incision is thus far made, we must proceed to enlarge the opening by which they passed from the abdomen. In doing this the probe-pointed knife should be used, with the finger for a director; and the incision should be made obliquely upwards, in the direction of the fibres of the muscles. In general, a small enlargement is sufficient. If any adhesions of the gut are found, they should be separated.

If, on examination, we find any part of the caul or omentum, gangrenous or mortified, it should be removed with a pair of scissors, and then returned into the body, unless there are blood vessels of consequence, in which case they should be taken up, and the end of the ligature left to hang out of the wound, till it can be pulled away.

When a portion of the gut is found to be mortified, if returned in this state, a discharge of the fœces would certainly take place into

the cavity of the abdomen, as soon as it should separate. To prevent this, which would produce death, if a small spot only is diseased, we should endeavor with a needle and thread to connect the sound part of the gut immediately above the mortified spot to the wound in the abdominal muscles. By this, the fœces are discharged by the wound, when the mortified spot separates or is cut out, till, by possibility, the gut may at last heal up entirely.

When the mortification of the gut is extensive, and includes the whole circumference of it, the gangrenous parts should be cut out at once, and the two ends of the gut sewed together with a fine needle and thread, the end of which should be left out, to be drawn out when the parts unite.

These operations may be tried, as affording at least a chance of life, when otherwise the patient must die

After the ruptured parts are completely returned, the sides of the cut should be drawn together with a thread at every half inch distance. This being done, the parts should be covered with a pledget of any emollient ointment, and soft lint, and the whole retained with a bandage. The patient should now be carried in a horizontal position to his bed, and there lay with his hips somewhat elevated. He should be kept easy with opiates; and blood letting, and low diet used, if necessary.

The sore should be looked at and dressed daily, by which means any change that takes place may be discovered; the ligatures in the course of six or seven days should be withdrawn; and as soon as the parts are cicatrized, a well adapted truss should be applied, and never afte wards laid aside.

Hernia in other parts of the abdomen require, generally, the same means of reduction as the scrotal hernia. In all of these operations, however, great care, and a good knowledge of the anatomy of the parts are requisite, that we may avoid injuring the arteries, the spermatic and other vessels, which might be productive of much mischief.

LITHOTOMY, OR CUTTING FOR THE STONE.

I shall not here enter into a description of this operation; as I have reason to believe, that, with the proper use of the means for dissolving, and carrying off the stone and gravel, mentioned in the treatment of those complaints, cutting for the stone can seldom be necessary.

GENERAL OBSERVATIONS ON FRACTURES.

A bone is fractured when it is broken or divided by external violence. When the teguments surrounding the bone remain sound and unhurt, it is denominated a simple fracture; when these are torn and lacerated, or the skin is broken, it is a compound fracture, as also when the bone is broken in different parts. Fractures are termed transverse, oblique, or longitudinal, as the bone is broken straight across, in an oblique or slanting direction, or lengthwise.

The existence of a fracture is for the most part easily discovered

by manual examination ; except in simple fractures, where only one bone of a limb has suffered, when it is often difficult to judge with precision, particularly when the parts have become tense and painful. In such cases we must judge as correctly as we are able from a view of all the circumstances and symptoms.

In old age, bones are more easily fractured than in the earlier periods of life. In infancy bones will rather yield than break, with a moderate force ; whilst in old age they become so brittle, that even the largest are frequently broken by trifling falls or bruises. Diseases often induce this brittle state of the bones; particularly the venereal disease, and the scurvy. These diseases seem to destroy the strength of the bone, insomuch that in some cases the hardest bones are broken solely by the ordinary action of the muscles of the limbs. Besides these, the bones themselves are subject to a disease that renders them soft and flexible; and this, in some cases, has been known to proceed so far as to render every bone in body crooked and distorted.

The symptoms that usually accompany a fracture, are : pain, swelling and tension in the contiguous parts ;—a more or less crooked and distorted state of the limb ; a crackling or grating noise on the parts being handled : and loss of power to a certain degree in the injured part. For the most part, the pain of a fracture is not very severe ; but in some cases it is so violent as to induce the most alarming symptoms , as spasmodic twitchings of the muscles, high inflammation, fever, convulsions and delirium ; which, if not soon relieved, often terminate in mortification of the parts, and death.

The most important consequences of fractures, are : stiffness and immobility of the injured limb ; distortion, either from a fullness or thickness remaining in the contiguous muscles or ligaments ; an accumulation of callus ; a contracted state of the contiguous joints ; or a waisting of the limb itself.

Broken bones unite sooner in children than in old age, but not with more certainty. Fractures of the small bones of the arms and legs, of the feet and hands, and of the ribs, in general heal easily ; while fractures of the larger bones, particularly of the thigh and upper arm, are managed with more difficulty. When the large bones are broken near their extremities, the danger is greater then when they are broken near their middle ; for the shortness of one end makes it more difficult to keep it in place ; and the ligaments of the joint are apt to be injured. Besides, the ends of bones are soft and spongy, and do not heal so readily. Fractures near the ends of bones are frequently productive of stiff joints, unwieldly limbs, pains and swelling.

The indications to be answered in the cure of fractures, are simply three . to replace the parts of the bone that have been displaced, to retain them in that position as long as may be necessary ; and to obviate such symptoms as may arise during the cure.

In some few cases, where the fracture is directly across, they are either not moved, or can easily be replaced ; but when broken in an oblique direction, they are apt to pass one another, so as to produce much deformity and pain. The contiguous muscles are thus severely injured, and excited to voilent action ; hence the malady is in-

creased by every exertion; and nothing will remove it but replacement.

In the reduction of fractures or misplaced bones, the operator should constantly bear in mind, that the limb should be placed in that position which shall give ease andrelaxation to the muscles; and when this is done the ends of the bone may generally be replaced with ease. When a limb is completely laid in this posture, the surgeon will in most cases be able to replace the bone without any assistance. I speak of this more particularly, as, till within a few years, it was the common practice to keep the limb extended, in this manner requiring the strength of two or three men, or of machines, to reduce it. The mischief this would often produce, it is easier to imagine than describe.

As it is of much importance, in replacing the parts of a fractured bone, to do it with accuracy, the most minute attention should be given to this part of the operation. Every inequality, from a portion of the misplaced bone, should, as much as possible, be removed, so as to render the injured parts similar to the corresponding sound limb. When the fractured bones are not properly reduced at first, the limb must either remain always distorted, or be put right during a future stage of the cure, when it will necessarily be done with more pain to the patient, and more trouble to the surgeon.

The bones being put right, our next object is to retain them in this situation as long as may be necessary. This we do with splints and bandages, and placing the limb in such a state of relaxation as will admit of its resting easy, and without disturbance till the cure is completed. The average time in which this can be done under favorable circumstances, and in a middle aged patient, may be nearly as follows: the bones of the leg, or thigh, in two months; the bones of the arm, in six weeks; the shoulder-blade, ribs, bones of the fingers and toes, hands and feet, in three weeks. In childhood, these fractures heal more quickly, and in old age, slower.

To prevent inflammation, and alleviate pain in the injured parts, particularly when they are much bruised, the same means are proper as have been recommended in wounds and bruises in other parts of the body, which it is unnecessary here to particularize.

Sometimes it is difficult to obtain an union between the ends of the fractured bones and they remain for a long time loose and detached. This may proceed from various causes; from constitutional diseases, as rickets, scurvy, venereal; from the ends of the fractured bones not being kept steadily in contact till united; from a portion of a ligament or muscle interposing between; or from the smallness of the broken bones. In a state of pregnancy, too, the bones do not heal so fast. When fractured, bones have remained disunited for a long time, the ends of the broken bones become smooth and hard, when it is useless to replace them; although this has in some cases been successfully remedied, by opening the flesh and sawing off the ends of the bones, so as to make a fresh wound; and in other cases, by passing a seton between the ends of the bones, thereby causing inflammation and adhesion.

In compound fractures, where the bone is laid nearly bare, and there are small pieces of bone entirely detached and loosened, so that

the circulation cannot go on in them, they had generally better be removed at once; as they may be considered as extraneous bodies, and only hinder the cure. When a portion of a muscle or ligament has got between the ends of the bones, it causes severe and continual pain, and when the limb is moved, twitchings, and shooting pain. To remedy this, we should endeavor to remove it, by putting the limb in every variety of posture, in order to disengage it; but if the bones still remain loose, an incision may be necessary.

Besides the causes already mentioned, which may impede a cure, there is another, an effusion of blood around the bone, which is very apt to do harm. When this happens in small quantity, it is generally absorbed, and no bad consequences ensue from it: but instances sometimes occur of the large blood vessels being cut by the sharp fragments of the bone. When the quantity of blood thrown out is considerable, the tumefaction of the limb becomes so great that it is necessary to lay it open in order to secure the injured vessel with a ligature; but when the swelling does not arrive at any alarming height, we rather trust to the powers of nature to contract the arteries and absorb the effused blood. In some cases, when the blood has remained long in contact with a broken bone, the power of forming callus appears to have been destroyed by it; the periosteum separates, no union takes place, and for the most part, a thin fœtid matter is discharged. In this situation, no cure can be made till those parts of the bone which have separated from their covering have exfoliated; and as this is in general a tedious process, it may be hastened by the removal of the uncovered bone with a saw, which will render the cure quicker and more certain.

Having premised these general observations, we shall now briefly consider the fractures of particular bones.

OF FRACTURES OF THE NOSE.

The arched form of the nose prevents its being so frequently fractured as might otherwise be. Much violence, however, fractures them.

These fractures require particular attention, as injuries may ensue of consequence, as polypii and tedious ulcers; injury of speech and smelling, &c.

All that is necessary to be done in this case is, to replace the bones carefully, and with as much accuracy as possible. When this is done properly, they will for the most part remain in their situation without assistance; and soft dressings will complete the cure.

The same remarks will also apply to the cure of fractures of the bones of the face and jaws; and it is unnecessary here to repeat them, as these fractures are of such endless variety, that the judgment of the surgeon must be his guide.

OF FRACTURES OF THE COLLAR BONE AND RIBS.

These are, from their slender structure, and position, more liable to be broken than any other bones in the body.

A fracture of the collar bone is in general, easily distinguished. On the corresponding arm being moved, a grating noise is produced

in the fracture; the ends of the broken bone readily yields to pressure, and it is pulled apart by the weight of the arm.

If one of the broken parts is out of place, it should be raised or depressed, as the case may be, and the two ends brought into contact, and there retained until they are united. To affect this, the whole weight of the arm should be suspended in a sling, and the shoulder kept in such a position as shall favor the ease of the broken bone; for if the elbow is allowed to drop, the arm bone and shoulder-blade will both fall down, and the broken bone be again separated.

When the ends of the fractured part are properly supported, they will generally unite in the course of a fortnight; but the arm should never be used with freedom till the end of the fourth or fifth week

Fractures of the ribs may be discovered by the seat of the pain, and by pressure with the fingers For the most part, the attending symptoms are moderate; the pain inconsiderable, no fever occurs, and the patient soon gets well; but in some instances the pain is severe from the first, the breathing becomes difficult, attended with cough and perhaps a spitting of blood; and the pulse full, quick, and sometimes oppressed. The breaking of a rib merely cannot produce any of these symptoms; we may therefore suppose, in such a case, that the broken rib is pushed inwards, by which the pleura and lungs are compressed and lacerated, thereby accounting for these symptons.

In severe cases of fractured ribs, it may be proper to take a quantity of blood. If any inequality discovered by one end of the bone having risen above the other, we should endeavor, by moderate and equal pressure to replace it; and to prevent it from rising, a broad leather belt should be applied tight around the body to retain it. This belt may be lined with cotton, and kept on four or five weeks.

If, instead of the symptoms subsiding, an oppressed breathing is kept up by air escaping from a puncture in the surface of the lungs, or by blood discharged from a ruptured artery into the cavity of the chest; or when the pain is kept up by the fractured rib being forced in upon the pleura; it becomes necessary to make an opening with a scalpel. When a portion of the rib is merely forced inwards, the opening should be made directly upon the injured parts and on the rib being laid bare, the depressed part should be raised, either with the fingers or forceps. If any air or blood are collected in the cavity of the chest, an opening should be made to discharge them.

FRACTURES OF THE STERNUM OR BREAST BONE.

The breast bone is not easily broken by reason of its elasticity. It is sometimes, however, fractured and beat in upon the pleura. The dangerous symptoms, in the fracture of this bone arise from its being forced into the chest, from the vicinity of the large blood vessels of the breast, while the symptoms are nearly the same as those of a broken and protruded rib.

If the depressed rib cannot be raised by a deep inspiration, or other moderate means, an incision should be made of a length sufficient to admit of a free examination of the bone: when the depressed piece may be raised with a levator.

FRACTURES OF THE SPINE AND HAUNCH BONES.

Fractures of the bones of the back are seldom met with, except from gun shot wounds.

For the most part, they terminate fatally. The spinal marrow is generally so much shocked or injured, that it either produces a sudden or a lingering death. We judge of the injury of the spinal marrow by the severity of the pain, and by the parts below the wound becoming paralytic.

We should always attempt a cure, by replacing the bones, taking care that the marrow is not compressed, as in that case, death is the certain consequence.

When the haunch bone is broken, if the injury is deeply seated, the patient ought to be placed in the posture in which he finds the most ease, and confined as much as possible till the bones have time to unite. Blood letting will be useful to prevent inflammation. External fractures should be reduced and treated in the common way.

FRACTURES OF THE SHOULDER-BLADE.

This bone is not so liable to be broken as other bones, from its being moveable. Fractures of this bone are discovered by the seat of the pain; by the violence of the injury; by manual examination; and by stiffness and immobility in the corresponding arm.

We should replace the fractured parts with as much exactness as possible; and in doing so, we are much assisted by relaxing the muscles of the injured part. The arm and shoulder should be raised and supported, and the broken bone kept quiet; which, however, is a difficult matter. Inflammation from a fracture of this bone, is apt to be very severe.

FRACTURES OF THE UPPER-ARM BONE.

Fractures of this bone are easily discovered, either by sight or manual examination.

In the reduction of fractures of this bone, much extension is not required; but that it may be done with ease, the muscles should be relaxed as much as possible; this we do by moderately bending the elbow, while the limb is raised nearly to a horizontal direction. With the arm in this situation, the surgeon will in general be able to replace the bones without any assistance; but if assistance is necessary, an assistant may take hold of each end of the broken bone and extend it sufficiently.

To secure the fractured parts in their situation, a firm splint should be placed on the outside of the arm, and another on the inside, both covered with soft flannel; and while these are secured by one assistant, and the fore-arm supported by another, a flannel roller should be applied over the whole, sufficiently tight to support the ends of the broken bone, without interrupting the circulation. The fore-arm should be supported in a sling, and kept in a hanging position.

When no urgent symptoms takes place, such as pain and swelling of the arm, the bandage should not be moved for several days; but about the seventh day, in all fractures, it is proper to remove all the coverings, to see whether the bone is perfectly in its place, or not; for at this period any displacement may easily be put right. With good success, the bone will usually unite in less than a month, but the arm should not be used under six weeks.

FRACTURES OF THE BONES OF THE FORE-ARM.

The bones of the fore-arm are two, the fore-arm and the outer-arm bones. They are much exposed to injury, and are therefore often broken. When both bones are broken, it is easily known; but when one only is fractured, especially the fore-arm, the firmness of the outer bone keeps it on the stretch, and in its place, and we cannot so easily perceive the injury. The seat of pain points out the injured parts; and when either of the bones is fractured, a grating noise will be heard, if the surgeon grasps the limb firmly above and below this part, and endeavours to move it in different directions.

It is of much importance to distinguish the direction of the fracsure, particularly if near the wrist; for upon this our chance of making a perfect cure depends; and also to prevent the stiff and uneasy state of the arm, after the bones are united. These inconveniences should be guarded against, as practitioners are apt to be blamed for them.

On the seat of the injury being discovered, if any part is displaced, it ought to be replaced immediately. In doing this, the muscles should be relaxed, by bending the arm at the elbow and wrist; and strength enough exerted to replace it. This being done, splints, covered with flannel, and of a length to reach from the elbow to the tops of the fingers, should be placed, one along the course of each bone, and secured with a roller so tightly as to prevent the bones from slipping out of their places, but without impeding circulation or causing pain. In applying the splints, the palm of the hand should be turned toward the breast; this being the most convenient posture, in which the arm can hang in a sling. The splints should be long in order to prevent the motion of the fingers, which would tend to keep up inflammation.

The wrist is sometimes partly dislocated along with a fracture of the arm bones. If this is not carefully attended to, a stiff joint and swelling will be the consequence.

FRACTURES OF BONES OF THE WRIST, HANDS, AND FINGERS.

The bones of the wrist are small and moveable, and on that account are seldom fractured, except by shot, or heavy weights.

The difficulty in this case is, when they are replaced, to keep them there. The arm and hand should be well supported by splints, and inflammation prevented, or a stiff joint is the consequence.

If the bones of the hand are broken, after replacement, a firm splint, either of timber or pasteboard, should be applied over the

whole palm of the hand and inside of the arm, from the ends of the fingers to the joint of the elbow.

The finger bones are frequently broken ; but when properly treated, they readily unite, and the fingers become equally useful as before. If a splint is necessary, pasteboard, softened in water and shaped to the finger is proper.

FRACTURES OF THE THIGH BONE.

The middle or neck of this bone are the places most frequently broken. Fractures in the body of the bone are easily discovered by the usual grating noise ; if oblique, by the thigh being shortened ; or, if transverse, by the ends of the bone being displaced; by much pain, and the limb being unable to sustain weight.

It is often difficult, however, to distinguish fractures of the neck of the bone from dislocations at the hip. When the neck of the thigh bone is broken, the bone is always drawn upwards by the power of the muscles, and the leg thereby rendered shorter by three or four inches ; the protuberance is not so great as in a dislocation, and the grating noise may be heard. The joint is so thickly covered with muscles, however, that an accurate distinction cannot always be made ; and for the same reason, we are often uncertain whether the fractured bones are rightly replaced or not.

But even when we have reduced this fracture of the neck, it is very difficult to retain the parts in their situation, so as to prevent deformity, for the action of the muscles is continually drawing it out of place.

It may be proper for me here to remark, that whenever, either in setting fractured or dislocated bones, or in keeping them in place, we find the contractility or resistance of the muscles sufficient to be anywise inconvenient or troublesome, the application of " Sweet's Ointment," for relaxing the muscles, proves a most effectual remedy. It relaxes and softens all the parts, and makes the reduction perfectly easy, with far less pain. This is the ointment used for this purpose by the bone setting family of Sweets', the head of which formerly lived in Rhode Island, and who have become so famous for the skill and ease which they replace and cure broken and dislocated bones.

I will also mention here, (although from what has been said before, the practitioner may be fully aware of it,) that the " Anodyne Wash," is peculiarly appropriate, from its cooling and soothing power, to prevent inflammation, and relieve pain and tension, in any case of surgery, and where the skin is unbroken. This hint will be sufficient to induce a trial, and in that case I am confident it will not disappoint expectation.

Till of late, it was the common custom in reducing fractures or dislocations of the thigh bone, to extend the leg at full length, by which all the muscles of the limb were put upon the stretch ; and in this manner the bone was drawn into its place with great force, frequently tearing the muscles asunder. The absurdity of this practice is apparent. But if the muscles of the limb are relaxed by making the thigh form an obtuse angle with the body, or about half bent, while the joint of the knee is also moderately bent, it is sur-

prising with what ease the fractured end of the bone may be placed in its situation. The cause of resistance is thus almost entirely removed.

It is not, however, in replacing the bones, but in keeping them in place, we most commonly fail. In transverse fractures, this is easy, as the parts support each other; but to prevent any risk from sudden exertions the parts should be as firmly secured with splints and bandages, as is consistent with free circulation.

For the purpose of retaining the bones in their place, two splints are necessary; one to reach from the top of the hip joint to a little below the knee, and of a breadth sufficient to cover at least one half of the thigh; the other to reach from the groin to a little below the knee, and wide enough to cover about one third of the thigh.

The longest of these, covered with soft flannel, and laid upon a twelve-tailed bandage, is to be placed upon a thin pillow nearly as long as the thigh; and after the bones are accurately set, the pillow, with the bandage and splint above it, ought to be placed so that the splint may reach from the hip joint, along the outside of the thigh, to the knee. The relaxed posture of the leg should be continually preserved, when placed in the position where it is to remain The short splint must then be laid along the inside of the thigh, from the groin to the knee, where the twelve-tailed, or other bandage, previously placed beneath the other splint, must be applied with such tightness as to make an equal pressure over the whole thigh.

The limb should be properly bolstered up in a bent position. If the bed clothes are too heavy, they should be kept up with hoops, or the like. All involuntary startings should be guarded against, as much as possible. When no untoward symptoms occur, the limb might be left in this situation till the cure is complete; but lest the bones should by accident be displaced, and especially if the limb should swell and become painful, the bandage should occasionally be undone, and the parts examined. When no interruption occurs, the cure is in general complete in the course of six weeks; but all violent exertion should be avoided till the eighth or tenth week.

FRACTURES OF THE KNEE-PAN.

Fractures of the knee-pan, unless well managed, are apt to terminate in a stiff joint: This may sometimes proceed, however, from keeping the leg too long in an extended and immoveable posture.

In the treatment of fractures of this bone, in whatever direction they run, the leg should be extended, in order to relax the only muscles with which it is connected. This being done, a long firm splint of timber, thickly covered with soft wool or flannel, should be placed beneath the leg and thigh, from one extremity to the other; and to this let the limb be secured with a strap above and below the knee.

The different parts of the fractured bone are now to be brought as near together as possible with the hand; but no bandage is yet to be applied. The first object is to prevent inflammation, which may be done, as before directed. This being done, if the parts appear to be nearly or quite in their place, they ought not to be disturbed. The joint may be covered with some cooling application, by which it will be kept soft and easy. But if

the broken parts, instead of being nearly in contact, are found separated to any considerable extent, we ought first to replace them, and then endeavor to retain them by the application of bandages. In fractures lengthwise of the leg, this is easily done, either with the common uniting bandage, or with slips of leather spread with glue or adhesive plaster But in transverse fractures, the action of the muscles continually tends to separate the broken parts, and we cannot always replace them easily, without the application of some relaxing ointment to the extensor muscles of the thigh to which the knee-pan is attached. It is not necessary, if we cannot do it easily, to bring the bones in close contact; for a cure may be obtained even if they are a quarter of an inch distant.

It will be obvious to the practitioner, that the bandages required in this case, must be of a peculiar construction, in order not to bend down the sides of the bone out of its proper level. The limb being secured in this manner, the bandages should not be removed till the twelfth or fourteenth day, if no inflammation intervenes; but about this time the bandage should be removed, and the limb may be moderately bent, and this may be cautiously repeated every third or fourth day, in order to preserve the motion of the joint.

The joint of the knee is liable to another injury something similar in its effects to the fracture of the pan; namely, a separation by violence of the ligaments of the knee-pan. The usual effect of a smart stroke or a severe fall upon the forepart of the knee, is a a fracture of this bone; but where a person carrying a heavy burden upon his back falls with his knee much bent, a rupture of the tendon more frequently happens, which sometimes retracts two or three inches.

The treatment advised for a fracture, proves equally successful here; only in this case we have to trust entirely to the extended posture of the limb; and although the tendon and bone cannot be brought close together, the cure may always be accomplished.

FRACTURES OF THE SHIN BONES.

In fractures of the leg, one or both bones may be broken; the latter is more frequently the case, and then the direction of the fracture is more easily perceived. When one bone only is broken, the nature of the injury is discovered with more difficulty; but this is of little consequence, as the sound bone so effectually supports the other, that little more is necessary than confinement till the bone is united.

Fractures are more frequent near the joint of the ancle than in other parts. The outer shin bone is generally broken an inch or two above the lower end, as that is the weakest part.

The same management proposed in fractures of the thigh bone, is applicable in fractures of the leg; in replacing the bones, the muscles should be relaxed, and this is done by bending the knee and slightly extending the foot. The bones being reduced to their place and the patient placed in such a manner that the injured leg may be laid upon its out side, with the knee bent, splints and bandages should be applied: the splint on the outside, reaching from

a little above the knee to beneath the ancle, to prevent motion in both those joints.

FRACTURES OF THE BONES OF THE FOOT AND TOES,

Are to be managed nearly in the same manner with similar injuries of the hands and fingers ; it is therefore unnecessary to particularize.

COMPOUND FRACTURES.

A compound fracture is when the skin is broken, either by splinters of bone protruding through the flesh, which often happens when the leg is broken by jumping, or by leaping from a carriage under full speed ; or by an external bruise.

The admission of air, undoubtedly, to the wounded flesh, is the reason why compound fractures are so much more hazardous than simple. The worst variety of simple fracture will continue to do well as long as the skin remains entire; but if, by any accident, the point of the bone is pushed through the flesh, from that moment the pain becomes severe ; inflammation and fever take place ; the limb is apt to be attacked with severe spasmodic twitchings ; and to these gangrene or extensive suppurations frequently succeed, if not prevented.

In the treatment of a compound fracture our first object is to stop the effusion of blood, with the tourniquet, if considerable ; and then to consider whether we should attempt to save the limb, or amputate it. And it should be a very severe and hopeless case, to render amputation necessary, in my opinion. It has been the common custom with surgeons, of late years, to take off the limb without much hesitation whenever a fracture of this kind is severe, or presents an untoward aspect ; and I have no doubt that this operation is often performed, unnecessarily, under the idea that it presents a greater exhibition of surgical skill and manly daring, than patiently to assist Nature in restoring the limb to soundness, and the use of the patient. Such are weak and silly notions however, and but poorly compensate for the loss of a limb for life.

It is my firm belief, and I judge from experience, that there seldom occurs a case of compound fracture so bad, that might not, with proper means, and proper care and attention, be made whole, and the limb restored to usefulness. The danger of mortification appears to be the most urgent motive for amputation ; but I never experienced any difficulty from this when the proper antiseptic applications were made use of, as charcoal and yeast, and the like, or in the worst stages, of fish-worms ; and also by keeping the air excluded from the wound. Hemorrhage is another difficulty that often occurs in these fractures : this must be stopped, by compression, with the tourniquet, if necessary, or by a ligature upon the artery.

In the treatment of compound fractures, our object is the same as in the management of those of the most simple nature ; namely, to replace the bones that may be deranged, and to retain them until they are united.

In the first place, all extraneous bodies should be removed, as well

as the small pieces of bone that will not probably unite with the rest; for which purpose, the opening, if too small, should be enlarged with a scalpel. And this being done, we in general find that the bones are easily replaced, by relaxing all the muscles of the limb, as before directed. Sometimes, however, a sharp point of a bone is so far pushed through the teguments, that it cannot be replaced by ordinary force. In this situation, we should either saw off the end of the protruded bone, or enlarge the wound. When a long sharp bone is much protruded, it should be removed. In making incisions, we are to take care to avoid the arteries.

The splinters of bone, coagulated blood, and other extraneous bodies being removed, any artery that may be cut being secured, and the protruded bones replaced, a pledget of soft lint with ointment, should be laid over the wound, and the limb placed in a firm splint, in a relaxed posture. As it will be necessary to dress it frequently, in order to remove the matter as it collects, the limb, with the bandages should be so placed that this may be done without disturbing it.

Inflammation is particularly to be guarded against, as from a high degree of this, mortification ensues, and also those extensive collections of matter which sometime occur; therefore, the applications before mentioned may be used, for promoting the formation of pus, and cooling the inflammation.

In some cases when the humours of the system are vitiated, and the discharge from the sore great, I have found the "Anti-mercurial Syrup," very useful in promoting the healing of the wounds.

DISLOCATION.

A bone is said to be dislocated, or luxated, when that part of it forming a joint is displaced. Dislocations may also be simple and compound: Simple, when the end of a bone is merely displaced; and compound, when the surrounding soft parts are injured.

For the most part luxations are produced by external violence, as from blows, twists and strains, in leaping, wrestling, or falling. But they are also produced by other causes, as a morbid weakness or relaxation of the ligaments of the joint, which sometimes occur as the consequences of palsy, chronic rheumatism, &c. particularly in the hip joint. These last, however, being the effect of disease, will be treated of in another place.

Dislocations produced by external violence are chiefly the objects of surgery. The symptoms usually induced by these, are, inability to move the injured limb; pain, tension and deformity in the part affected; and in some cases, inflammation, spasms, and fever.

The first approach of swelling in dislocation, is always of the inflammatory kind. This, however, should be distinguished from a seeondary swelling, a pale, soft, indolent tumefaction, to which dislocations are liable; owing, I suppose, to the lymphatic vessels of the limb being compressed by the end of the displaced bone. This is most frequent in the shoulder and thigh.

Compound dislocations are obvious enough: but partial disloca-

tions should be minutely examined, and not suffered to pass as sprains and contusions of little consequence; for in this manner, many are rendered lame for life, when a little attention might have saved them.

The skeleton is commonly had recourse to for a knowledge of the joints; but this alone is not sufficient, some knowledge of the cartilages, ligaments and tendons with which the bones are connected, is requisite, in order to give a correct idea of the injury. There are two varieties of joints; one the ball and socket, which admits of motion in all directions, as the hip and shoulder: the other, hinge-like, which admits of only flexion and extension, as the elbow and the knee. These last are less liable to dislocation.

Besides the usual coverings, every joint possessed of much motion, is provided with what is termed a capsular, or bag ligament, which forms a kind of pouch or bag, that completely surrounds the articulation, and serves at the same time to retain the ends of the bones together, and to contain a transparent fluid, for the purpose of lubricating the joint and cartilages. This ligament is always ruptured when the joint is completely dislocated, and often torn from its insertion around the bone.

One of the most unfavourable circumstances with which dislocation is ever attended, is a fracture of one or both the bones forming the joint; for severe inflammation, suppuration, and stiffness of the joint, is apt to be the consequence.

When a bone is out of joint, the sooner it is replaced the better, and generally, the easier; except when the inflammation and swelling are very severe, in which case, that must first be relieved as much as possible, before we attempt it. When a joint is out, and has lodged several weeks or months among the contiguous muscles, the head of the bone forms a socket for itself, and is commonly firmly grasped by the muscles with which it is surrounded. By this time, too, the cavity or socket, will probably in some degree be filled up by the soft parts contiguous. In these cases the reduction must be done gradually, by softening the cartilage and muscles about the joint, with some relaxing ointment, and extending it by little and little, till it can finally be brought in without much pain.

The treatment of common dislocations is very simple, and may be told in a few words: the first object is to put the displaced bone into its natural situation with as much ease and expedition as possible. To do this, the limb should be placed in that position which will most relax the muscles; and then sufficient strength exerted to draw it into its place; unless indeed, too great force is likely to be required, in which case the muscles should be relaxed by rubbing in some softening ointment, as Sweet's, or something similar; Or it may be done in the more homely way, as I have often seen practised among the farmers, and almost invariably with success, of making the patient drunk, which most effectually unbraces the nervous and muscular power; thereby rendering the reduction easy. The second object is, to keep the bone in its place, till the parts have recovered their tone: this, which is seldom difficult, however, is to be done by keeping the limb in a relaxed posture, and, if necessary, by a bandage. The third object is, to prevent pain and inflammation.

other bad symptoms. The "anodyne wash" I have found exceedingly useful for this purpose, and is generally sufficient. Leeching may also be beneficial in some cases

In compound luxations, where the skin is broken and the flesh bruised, the mode of treatment is very similar to that of compound fractures

We shall now proceed to speak of the most important of the dislocations to which the human frame is subject, as they occur in particular parts.

DISLOCATION OF THE LOWER JAW.

The under jaw cannot be dislocated, either upwards, backwards, or sidewise; it can only be dislocated forward and downward In every other direction, the hinges are so much surrounded with bone, that they cannot be forced out of their sockets; but when the mouth is widely opened, as happens in yawning, the joint is apt to slip out in a forward direction. Sometimes only one side of the jaw is dislocated.

In these luxations the chin is thrown forward and downward, the mouth wide open, and much pain accompanies every attempt to close it; and the patient cannot speak distinctly, or swallow without great difficulty.

The patient being firmly seated on a low chair, with his head properly supported behind, the surgeon standing before, with his thumbs sufficiently guarded, should push them as far as they will go between the teeth of the upper and under jaws, the under or flat part of the thumbs being placed on the teeth of the under jaw; the palm of each hand should be applied to the outside, while with his fingers he lays a firm hold of the angles of each jaw. With the fingers applied in this manner, he should pull the under jaw forward, till he finds it move somewhat from its situation; and this being done, but not till then, he should press the jaw forcibly down with his thumbs, and moderately backwards with the palms of his hands; when, if the different parts of the operation are rightly managed, the ends of the bone will immediately slip into their place; upon which the thumbs should be instantly withdrawn to prevent being bitten.

The jaw being reduced, the patient should be advised to avoid gaping, yawning, and much speaking, as the joint may be easily turned out for some time.

DISLOCATION OF THE HEAD.

In every dislocation of the head, the head falls forward upon the breast; the patient is instantly deprived of sensibility; he lies as if he were dead; and he soon dies, if the luxation be not quickly reduced.

Dislocations of the head, for the most part, terminate fatally, for the want of immediate assistance. Therefore, whatever be done, must be done quickly, and no time lost in preparation. The patient being seated on the ground, and supported by an assistant, the surgeon standing behind, should raise the head from the breast; and

the assistant pressing down the shoulders, the head should be gradually pulled straight up till the dislocation is reduced; or if this does not happen with moderate extension, the head may be gently moved from side to side. A sudden noise or crack is heard on the joint coming in place; and, if the patient be not entirely dead, an immediate recovery of his faculties ensues. The reduction may also be attempted when the patient lies on his back, by the surgeon placing his feet or knees against the patient's shoulders, and then extending the head.

The bone being replaced, the patient should be immediately laid in bed, and proper means taken to prevent inflammation, and his bowels kept open.

DISLOCATIONS OF THE SPINE.

The spine is so elastic, and the bones of which it is composed are bound together with such strong ligaments, that they are seldom dislocated without being broken. A complete dislocation of the vertebræ of the back never happens without immediate death, the spinal marrow being inevitably broken.

It sometimes happens, however, that partial dislocations of the back take place, and the patient may survive, and even a complete cure may be obtained; but this does not often happen.

These luxations may be known by examination, by the body being distorted, and by a paralysis of all that part of the body below it.

These dislocations are extremely difficult to reduce, because the bones are usually forced inward. The safest, and perhaps the most certain method is, to bend the body slowly and gradually forward, as far as it can be done, over a cask, extending it a little at the same time. If this brings it into place, the body should be immediately raised; but if not, it should be repeated. When the displaced bone is much out of its place, neither this nor any other method will probably succeed.

DISLOCATIONS OF THE COLLAR BONE,

Are not common; they are more liable to be broken. They may be luxated, however, at either end, though usually at its junction with the breast bone.

As the collar bone is thinly covered, dislocations of their extremities are easily discovered; they commonly produce a good deal of stiffness and immobility in the shoulder; for the neck of the shoulder-blade, having lost its support, is liable to be drawn out of its situation.

A dislocation of this bone is easily reduced by pressure with the fingers. The difficulty consists in keeping it in place. The weight of the fore-arm ought to be moderately supported, and a little pressure made upon the displaced end with a bandage.

DISLOCATION OF THE ARM, AT THE SHOULDER JOINT.

The joint of the shoulder is formed by what is usually termed ball and socket, the round head of the arm bone being lodged in a cavity

in the end of the shoulder-blade. This cavity, however, is so superficial, that, in the bone, it does not appear to contain above a tenth part of the head of the arm; but the cavity is considerably enlarged by means of a cartilaginous brim; and a capsular ligament surrounds the whole joint. This mechanism makes the motion of the joint more free; but at the same time exposes it to more frequent luxations.

The arm bone is most frequently luxated downward into the arm-pit. It may also be drawn downward and forward, resting on the ribs; or downward and backward.

We judge that the arm bone is out of joint, by the patient being unable to move the arm; by pain being excited by pressing the arm to the side; by its being longer or shorter than the other arm.

When long out of joint, the arm is apt to become dropsical, and swell, from the pressure produced upon the nerves and lymphatic vessels of the arm, by the head of the bone.

In simple dislocation of the shoulder, the reduction is easy, if properly managed. But if it has been long out, the operation is more difficult; for in such cases the head of the bone has formed a socket for itself among the contiguous parts, from whence it cannot be moved without tearing asunder some of the muscles which surround it; and even then the natural socket may have become so diminished, or grown up, as to be almost unfit to retain it. In such long standing cases, however, we must attempt the reduction gradually, after softening and relaxing the parts with the proper ointments, &c.

Various modes of replacing this bone are practised; but as no surgeon can be at a loss, as to what should be done, I shall not particularize much.

The joint is sometimes replaced by putting the naked heel into the arm-pit, inside of the arm, and then extending the arm, till, with the heel pressing out the head of the bone, it slips into its place. It may be reduced also, by extending the arm, inclining a little outwardly from the body, till the joint comes in place: or while the arm is thus extending, to pull the head of the bone outwardly into place, by a towel or handkerchief around the arm, at its upper end. Another method, and perhaps equal to any, is, to extend the arm, with its muscles and those of the fore-arm, relaxed as much as possible, and, at the same time, to push back the shoulder-blade, thus favoring the reduction.

It would be advisable, perhaps, in most cases, to apply the relaxing ointments, before proceeding to operate, as it will render the reduction much safer and easier, both to the surgeon and patient.

DISLOCATIONS AT THE ELBOW JOINT.

The bones of the fore-arm are generally dislocated upward and backward; and they can scarcely be dislocated in any other direction without a fracture.

As the joint of the elbow is but thinly covered, a dislocation is easily discovered by the feeling, unless swelling and tension have taken place. In whatever way the joint is out, the arm becomes stiff and immoveable.

In setting these bones, the patient should be seated on a chair of a convenient height, and the arm firmly secured by an assistant. When the bones are luxated backward, the fore-arm should be moderately bent, in order to relax the flexor muscles; while in this position, it should be slowly and gradually extended; and if care be taken, to slowly bend, the elbow, as the extension is made, we seldom fail to replace the joint. In some cases, where the point of the elbow is broken, it may be necessary to extend the arm in a straight direction, till the joint comes in place.

The reduction being completed, the fore-arm should be kept in a relaxed position, with the elbow moderately bent.

The bones of the fore-arm are also liable to be dislocated in their connexion with each other. This is most common at the wrist. It is accompanied by pain, swelling, and distortion, and other signs of luxation. In general the bone is easily replaced, but it is more difficult to retain it. The best method, perhaps, of doing it, is by splints and bandages continued for a sufficient length of time.

DISLOCATIONS AT THE WRIST.

The bones of the wrist are so firmly connected together by ligaments, and so well adjusted by their position, that they are not so often displaced as might be expected. When they are so, however, it is generally outwardly.

The dislocation of these bones is readily perceptible to the sight and feel, and we should examine carefully that we do not let it pass as a mere sprain.

To reduce these bones, the hand and arm should be extended, and they may be easily pushed in their place; when a bandage and splints should be applied to retain them.

BONES OF THE HAND AND FINGERS.

These bones, notwithstanding their mobility, are sometimes displaced, which may be easily discovered on examination, and as easily replaced.

DISLOCATION AT THE HIP JOINT.

The head of the thigh bone is so strongly and completely enclosed by the socket, cartilages, and muscles, that we would suppose it hardly possible it should be thrown out of joint by external violence: it would appear more likely to be broken at the neck, than to be forced from its socket. Such is frequently the case; but nevertheless, dislocations do often happen.

Dislocations of the thigh bone may take place in various directions, viz.: upward and backward, upward and forward, downward and backward, downward and forward, and directly downward. These all may happen; but the most common variety is, downward and forward, by which the head of the thigh bone is lodged in the round hole.

Every luxation of the thigh bone, must produce lameness, pain,

tension, &c. When the head of the bone passes upward and backward, the leg must be shorter than the other, so that the points of the toes only will touch the ground when the patient stands on the other foot; and the knee and foot will be turned inward

When the bone is luxated upward and forward, the leg must be shortened; the head of the bone may be felt in the groin, and a vacancy in the hip; the knee and toes will be turned outward, and if not soon replaced, the pressure will cause pain in the spermatic cord and testicles.

In the most frequent luxation of this bone, viz.: forward and downward, the leg appears to be considerably longer than the other; the knee and points of the toes are turned outward; a vacancy is felt in the hip, and the head of the thigh bone may be plainly felt a little below the groin, in the round hole.

A dislocated thigh bone is generally considered very difficult of reduction, particularly in cases of long standing, and great power is considered requisite: but with the proper application of the relaxing ointments before mentioned, this difficulty is in a great measure overcome.

The reduction of this bone is commonly attempted by pulling the limb downward. Some advise the limb to be drawn directly from the part in which it is lodged; others desire it to be pulled exactly in a line with the hip joint. The patient being placed upon his back, and properly secured, the limb is extended in one or other of these directions, till the reduction is accomplished, or till such a force is applied as makes the operator afraid to proceed further.

Dislocations of this bone are often reduced in this manner, even without any relaxing application: but it will not succeed in all cases, and cannot therefore be trusted to as a general rule.

In severe cases, and when the head of the bone is pushed downward and forward, the following method will usually succeed: the patient is laid on his back across a bed, and firmly secured by two or three assistants; a broad strap, or table cloth, properly folded, is passed between the thighs and over the groin, on the sound side, and given to two other assistants; a similar strap is to be passed round the luxated thigh, as near as possible to the head of it; the ends of which must be given to an assistant, standing on the opposite side, a stiff leather belt having been fixed closely round the thigh, above the knee, with straps fastened to it to pull by, these straps are to be given to an assistant or two, while the knee is supported by another assistant with the leg moderately bent. The thigh is now to be moderately stretched by the assistants who have charge of the straps at the foot; but the extension should not be carried farther than what may be considered necessary for drawing the head of the bone down to the under part of the round hole; and this may be done with moderate force. The strap round the top of the thigh must now be firmly pulled by those who have charge of it; who, standing somewhat higher than the patient, should draw the thigh upward and inward; and the extension should be continued in this direction till there is reason to suppose that the head of the bone is clearly raised from the hole in which it is lodged. At this time the person at the knee should be desired to move it somewhat inward, and

push the head of the bone upward and outward : this can be done with certainty if he takes care to keep the leg just so much bent as to relax the muscles. If all the assistants perform their parts, the first attempt will generally answer.

In whatever direction the bone may be dislocated, the point requiring most of our attention is the raising the head of the bone sufficiently, before any attempt is made to force it into the socket. This being accomplished, a very slight force will, in general, draw it down, when the dislocation is upward ; and when downward, it may be easily pushed up.

In this manner recent luxations of this joint may, for the most part, be reduced ; but in long standing dislocations, it can only be effected gradually, by the continual application of relaxing ointments, and by extending the limb, daily, more and more, as the patient can bear easily, till it can finally be drawn into place. All this should be done in a moderate manner, and without forcible or painful means.

The limb should be kept at ease, and carefully attended to for some time after it is set, before the patient should venture to use it much.

DISLOCATION OF THE KNEE-PAN.

The knee-pan may be displaced either partially, or wholly, and in any direction laterally ; this may also happen at the same time with a dislocation of the knee-joint. It cannot, however, be completely luxated, without a rupture of the ligament that connects it with the shin bone, or the muscles of the thigh.

A dislocation of the knee-pan is easily discovered, and as easily replaced, when the leg is laid straight. But even a partial dislocation is apt to occasion lameness and pain at the joint ; together with indolent swellings. These are, therefore, to be guarded against.

DISLOCATIONS AT THE KNEE-JOINT.

The shin bone of the leg, only, is concerned immediately in the joint of the knee ; but as this bone cannot be dislocated without drawing the other after it, I shall mention both together.

As great strength is required in the knee, the bones of which it is formed, are connected together by the strongest kind of articulation, viz. : the hinge-like joint ; and this is firmly tied togther by strong ligaments. An unusual degree of violence is therefore requisite to force these bones out of joint, and this cannot be completely done, without rupturing the ligaments.

The most partial luxation of this joint is readily distinguished by the violent pain it excites, and by the deformity and lameness it produces. When the knee-pan is dislocated at the same time with the shin bones, it will generally come in place on the reduction of these bones.

Luxations of this joint should be replaced by fixing the thigh with sufficient firmness, and extending the leg till the ends of the bones are entirely clear of each other, when they are easily brought in place. Where the bones are completely displaced, considerable

force will be required. It is scarcely necessary to observe, that the muscles of the leg should be as much relaxed as possible, both by the position and by ointments, as before mentioned, before making the attempt.

Scarcely any joint is so apt to suffer from inflammation, as that of the knee, and also to become exceedingly painful; these, therefore, should be properly guarded against, and the limb for a considerable time kept at rest.

The upper as well as the lower end of the outer-shin bone is sometimes forcibly separated from the shin bone; and this is apt to be overlooked as a sprain, and the bone suffered to remain out of place. Strict examination should therefore be made in such cases.

DISLOCATIONS AT THE ANCLE.

The joint of the ancle, is formed by the ancle bone, or first bone of the foot, being received into a cavity in the under end of the shin bone; which is bounded externally by the end of the outer-shin bone, projecting a considerable way past the end of the shin bone.

The ancle bone may be put out, either backward or forward, outward or inward, but more frequently in the latter direction. A displacement is easily discovered by the distortion, pain, and lameness.

To reduce this dislocation, the leg being properly bent and relaxed, the foot should be extended till the point of the ancle bone is clearly passed the end of the shin bone, when it will readily slip into place, or can be pushed in

As dislocation of this joint, if not rightly replaced, and carefully attended to, may produce weakness and lameness through life, particularly if the end of the outer shin bone should be broken off, by the foot being forced outward; great care should be taken in setting the bones, and afterwards in keeping them in place, till the fracture is perfectly united, and the ancle becomes strong.

DISLOCATION OF THE HEEL AND OTHER BONES OF THE FOOT.

The heel, which is the largest bone of the foot, is sometimes dislocated, sidewise. In this, as well as in luxation of the other bones of the foot, the replacement is easy and the judgment of the surgeon will readily point out the way in which it is to be done.

DISTORTED LIMBS.

Limbs may be distorted from a morbid state of the bones, or from a contracted state of the muscles, or both, or from malformation; and they arise in all periods of life.

In infancy the bones are soft and pliable, and are easily affected by the posture of the body. The bones of the legs are apt to become crooked, by causing the children to walk too early: The rickets, will also cause crookedness, by softening the bones so much that they yield to the ordinary action of the muscles. But the most

frequent cause of distorted limbs, is the contraction of the flexor muscles of the leg and fore-arm, which are often produced by an inflamed state of the knee and elbow, and particularly in white swelling. As the limb lies in greatest ease while the muscles are relaxed, the patient naturally keeps it always bent; and when this is long continued it almost constantly terminates in such a contracted state of the flexor tendons, as to keep the limb bent. A clump foot is also frequently produced by the contraction of the tendon in the hollow of the foot.

With the majority of physicians, it has been supposed, that little advantage is to be derived from any remedies for distorted limbs; and they have therefore seldom made any attempt to cure them. This opinion could not have arisen from the absolute incurability of the disease, but merely from ignorance of the proper means. And thus, (no compliment to such physician,) many who might have been relieved, have been suffered to continue deprived of the use of their limbs, in the belief that they were incurable.

Where a limb is distorted from a stiff and contracted state of the muscles and tendons, a free use of emollient and relaxing oils, and ointments, with moderate gradual extension, is a remedy which frequently succeeds, and can never do harm. To give them their full effect, the emollients should be used very freely. All the contracted muscles and tendons should be rubbed with them warm, for at least half an hour, three times a day, and the limb should be kept constantly wrapped in flannel wet with the unction. While the frictions are applying, the limb should be slowly, though firmly extended, as much as the patient can bear; and the limb afterwards kept as much as possible from contracting. It is necessary, however, to remark, that this extension should not be made quickly: by doing so, if the joint happen to be stiff, which is sometimes the case, we may cause inflammation and pain, by over-stretching it: Therefore, the extension should be made in a gradual manner, and without much force.

The oils most useful for the above purpose, are bear's oil, rattlesnake's oil, neat's-foot oil, goose, hen's and duck's oil, &c. and the compositions of Sweet's ointment, and others.

AMPUTATION.

By amputation is meant the cutting off the whole or part of a limb. The mutilation produced by the operation renders it one of the most dreadful in the practice of surgery; yet, it sometimes becomes necessary, as the only means of saving life. It is an operation, however, so repugnant to humanity, so distressful to the unfortunate sufferer, and in some circumstances so fraught with danger, that nothing but a clear conviction of this necessity can warrant our proposing it in any case.

The operation itself is not difficult; every practitioner accustomed to handle instruments may perform it. But to distinguish with precision the cases which require it from those which might do well under a healing treatment, and to determine the particular period

when it ought to be performed, are circumstances which require more deliberation than perhaps any other in surgery. I shall therefore mention the cases wherein it may be proper to amputate, before proceeding to describe the method of performing it.

The causes which may render amputation necessary, in my view, are,

1st. Bad compound fractures.

2d. When a portion of the limb is carried off by a cannon ball, or in any other manner, if the bones are unequally broken and not properly covered; and,

3d. Particular distortions of a limb, in which case amputation must be a matter of choice, rather than of necessity.

When bad compound fractures happen in the army or navy, where the patient cannot be properly attended to, and must be jolted about, and removed from place to place, it may be proper to amputate immediately, as the only course admissible under these circumstances. But in private practice, and in all cases, where the patient can be placed in an easy and comfortable situation, from which he need not be removed till the cure is completed; where he can be kept quiet, and have all the advantages of good air, a proper regimen, and the assistance of capable practitioners, very few cases will occur in which immediate amputation should be advised. The only cause which, in such circumstances, can render immediate amputation proper, is, the bones of a limb, together with the muscles and other soft parts, with which it is covered, being so shattered and bruised that there will be no chance of the limb being rendered useful by any attempt to save it: in such circumstances it should be removed immediately; but this not being done, the operation should be delayed till the swelling, inflammation, and fever, induced by the accident, are removed.

Although early amputation is seldom recommended in private practice, yet, in the after treatment of compound fractures, it is sometimes proper: namely, in profuse hemorrhages, which cannot be otherwise stopped; and when the ends of the fractured bones remain long disunited, and attended with the discharge of such large quantities of matter that the patient runs some risk of sinking under it; and when this cannot be prevented by other means.

The second case mentioned, as requiring amputation, was, the removal of a portion of the limb by a cannon ball, or other violence.

This is one of those cases, which many contend can never require amputation; for the limb being already removed, it will be better, they allege, to endeavor to heal the sore, than to add to the pain and danger of the patient by an operation. This argument, though plausible, will not bear examination.

In wounds of this kind, the bones are commonly much shattered, and even splintered, and the muscles and tendons are left of unequal lengths, and much contused and lacerated. In this situation it is allowed by all, that the separate pieces of bone, and the ragged extremities of the muscles, should be removed. Now all this could seldom, I believe, be done in less time than the operation of amputation; whilst by amputating above the injured part, and covering the bone with sound muscles and skin, we diminish the sore so much that it would probably heal in a third part of the time that the original

wound would require: at the same time, the patient would have a good stump, which is of considerable consequence as a matter of convenience through life.

In the other case mentioned, namely, distorted limbs, when they are sound otherwise, amputation is made necessary only by the choice of the patient.

Besides the causes above mentioned, it is a very general practice with most surgeons to amputate in the following disorders, viz. extensive mortification; white swellings of the joints; large hard swellings of the bones; caries of the bones, accompanied with bad ulcers; cancer, and inveterate ulcers; indolent tumors; death and rottenness of the bone; and extensive lacerated and contused wounds.

It is possible that amputation may be advisable in extensive mortification; but I have never yet found a case however severe, in which I have not succeeded in arresting its progress, without recourse to the knife. Besides, when mortification has spread far, the juices of the whole system become so contaminated that an operation would not save life.

To stop the progress of mortification, poultices of charcoal and yeast may be applied, or these mixed with a strong decoction of wild indigo root; and these should be applied unsparingly, and changed very often, till the mortification is arrested. At the same time, saffron tea, and tonics of the most bracing kind, may be given internally. When the disorder stops, the "green salve," or something similar, may be applied over the affected part, which will assist in the separation of the dead flesh, and bring the parts to a healthy appearance.

This treatment, when thoroughly applied, I believe will save at least all that could possibly be saved by amputation; and at the same time restore the limb to soundness.

White swellings at the joint, is another disorder in which amputation is frequently practised. I cannot consider this judicious, because, first, when proper means are used, they can generally be cured without; and secondlly, as they proceed from a constitutional affection, or a scrofulous taint, it follows that a removal of a part of the body cannot eradicate the disease from the remainder.

The impropriety of the operation holds the same also, in cases of cancer, caries, and hard swellings, of the bones, death of the bone, inveterate ulcers, tumours, &c.: their cause is constitutional, and they must be removed by general purifying remedies, if removed at all.

These disorders are treated of in another part of this work.

REMARKS ON THE METHOD OF AMPUTATING.

Surgery is not perhaps, in any part of it, brought to greater perfection than in the method of amputating limbs. Before the invention of the tourniquet this operation was attended with so much hazard, that few surgeons ventured to perform it; and even long after the introduction of this instrument, the danger attending it was so great, that more than one half perished of all who had resolution to submit to it. In the present improved state of the operation,

with ordinary skill, not more than one death will happen in twenty cases, and even in less proportion.

The circumstances in this operation, that more particularly require attention, are, the choice, when this is in our power, of the part at which a limb should be amputated; the prevention of hemorrhagy during the operation; the division of the skin muscles and bones in such a manner as to admit of the stump being completely covered; the tying of the arteries alone, without including the nerve or any of the contiguous parts; securing the teguments in a proper situation, so as to prevent their retraction after the operation; and a proper after treatment.

Next to securing the patient against loss of blood, it is most important to save so much of the soft parts as will cover the stump, so as to heal the sore by the first intention; for without this the wound is large, the cure tedious, and the discharge apt to be so great as to endanger the patient's health.

Various means of amputating have been practised in different ages, and improvements made from time to time, till the science may now be considered as quite perfect. The method practised and recommended by Mr. Benjamin Bell, appears to be the most rational and successful, however; and I shall therefore give it in his own words:

OF AMPUTATING THE THIGH.

In amputating the thigh or leg, the patient should be placed upon a table of ordinary height with the leg properly secured and supported by an assistant sitting before him. The other leg should likewise be supported, at the same time that the arms should be secured by an assistant on each side, to prevent interruptions during the operation.

The flow of blood to the limb should now be stopped by the application of the tourniquet. The manner of using it is this: let a cushion, three inches in length, by one inch and a half in diameter, be formed of a linen roller, tolerably firm, but not so hard as to render the pressure produced by it painful: this being placed upon the course of the principal artery of the limb, let it be firmly secured by one or two turns of a circular roller of the same breadth with the cushion itself. The tourniquet with the strap connected with it, being now placed upon the limb, with the handle of the screw on the side of the limb opposite to the cushion, the strap is to be carried round the limb over the cushion, and tightly buckled on the other side. When proper attention is given to this, a single turn of the screw proves sufficient for putting a stop to the circulation of blood in the limb. The instrument should be placed as near as possible to the top of the thigh, and the cushion upon the thigh artery should reach to the groin.

With respect to the proper place for amputating the thigh, it may be observed as a general maxim, that no more of it should be taken away than is rendered necessary by the disease; for the more of it that is left, the more useful it proves.

An assistant should now be directed to grasp the upper part of the limb with both hands, and to draw up the skin and cellular substance

as far as possible. While the parts are in this state of tension, the operator standing on the outside of the patient, should divide them with a circular incision down to the muscles; this may be done with one stroke of the amputating knife, or in large limbs, at twice. The assistant continuing to draw the teguments upwards, the cellular substance connecting them to the muscles beneath, should be divided, till as much of the skin is separated with the edge of the knife, as the operator thinks will completely cover the stump.

The skin being still drawn tightly upwards, the muscles should be divided close to the edge of it down to the bone, by one perpendicular and continued stroke of the knife, beginning with the upper part of the large muscles on the inside of the thigh, and continuing the incision round through those beneath, and on the outside, till it terminates where it commenced. The operator should have his eye upon the course of the knife from first to last, in order to avoid cutting the edges of the skin, and conduct the operation safely.

In the usual method of operating, the bone would now be sawed across at the edge of the retracted muscles; but we are more certain of having a good stump, if the muscles are separated from the bone for the space of an inch; and it is easily done by inserting the point of the amputating knife between them and carrying it freely round from one side of the limb to the other. This being done, the muscles and teguments must be drawn up as far as the muscles have been separated from the bone; and it is easily done, either with a slit piece of cloth or leather. The periosteum should now be divided at the place where the saw is to be applied, and it should be done with one turn of the knife. At this place the saw should be applied, and with long and steady strokes the bone should be divided. In performing this part of the operation, the assistant holding the leg should be directed to hold it steadily, for if raised too far, the motion of the saw will be impeded, and the bone will be splintered if not sufficiently kept up. Any points or spilnters of the bone that may be left, should be immediately removed with the nippers.

The cloth or leather retractors should now be taken off; and the trunk of the large artery of the thigh being easily seen, should be drawn up with a tenaculum, and a sufficient ligature put upon it before the tourniquet is loosened; but as the muscular branches of this artery cannot be discovered as long as they are compressed, the screw should be immediately untwisted, so that the pressure be removed. All the clotted blood should be now removed from the stump with a soft sponge soaked in warm water; and every artery that can be discovered, should be secured with a ligature, care being taken to leave the ends of the threads of a sufficient length to hang over the lips of the wound.

The blood vessels being all secured, and the surface of the wound cleared of blood, the muscles and teguments should be drawn down till the skin completely covers the stump, and should be retained in this situation by an assistant till a flannel or cotton roller, previously fixed round the body, to prevent it from slipping down, is applied in such a manner as to support and fix them; for which purpose the roller should be wound two or three times nearly in a circular direction, round the top of the thigh; and should afterwards, with spiral

turns, be brought down near to the end of the stump, of such a tightness as to prevent the muscles and skin from retracting, without compressing them so much as to prove painful or impede the circulation. Here the roller should be fixed with a pin, while as much of it is left as will pass two or three times round the stump, as will be hereafter directed.

The ends of the divided muscles being placed with as much equality as possible over the bone, the edges of the skin must be laid exactly together so as to form a straight longitudinal line across the centre of the stump. When only one or two arteries have been secured, the ligatures should be left out at the lower angle of the wound; but when there are several, they should be divided between the two angles.

While an assistant retains the edges of the divided skin in contact, two or three slips of adhesive plaster should be laid across the face of the stump to preserve them in this situation; and the whole surface of the stump should now be covered with a large pledget of soft lint covered with some cooling ointment Over this there should be placed a soft cushion of fine tow with a compress of old linen. For the purpose of retaining them, as well as with the view of making a gentle pressure upon the stump, a slip of linen of three inches in breadth, should be laid over them, so as to pass directly across, and not from above downward. On being properly placed, the remaining part of the roller should be employed to fix it, by passing it two or three times round the stump.

In applying the roller, the tourniquet should be removed, and replaced immediately when the stump is dressed. If left loose it gives no uneasiness; and it enables the attendant to check any hemorrhage that may take place; a circumstance that merits attention for several days after amputation.

The patient should now be carried to bed, and the stump laid a little lower than the rest of his body; for this purpose the bed should be previously made with a gentle declivity from head to foot, and fine tow should be put beneath the stump. A hoop frame should be placed over the stump to keep off the bed clothes; and to guard against spasms, and prevent the limb from being moved inadvertently, it may be well to confine the stump to the bed with slips of flannel. Whether the patient complains much or not, we should give him an anodyne, by which he will remain quiet and easy through the remainder of the day.

Hemorrhages will sometimes happen, even many hours after the operation; the attendant should therefore examine the stump frequently with the utmost care; and on any quantity of blood breaking out, he should twist the tourniquet sufficiently tight till assistance is procured This can seldom happen, however, unless through the fault of the practitioner, in not searching for the arteries with sufficient care, and taking them up in the time of the operation. When there is only a trivial oozing of blood, we need not be alarmed, nor will it be necessary to remove the dressings; but whenever the discharge is so great, that we may suspect it proceeds from a large artery, nothing can be depended upon but tying it.

The only other symptoms that we have reason to dread, during

the first three or four days after the operation, are severe spasmodic affections of the muscles, and inflammation and tension of the stump, with the consequent fever, which in some degree, succeeds every case of amputation, but which always proves hazardous when it proceeds to a great height. When the arteries are tied without including the nerves, these spasms seldom become troublesome; but when they do take place, they must be relieved with opiates, &c.

At the end of the second day, the stump should be examined. For this purpose the stump should be quietly supported by an assistant, till the last turns of the roller are undone, and, till the cross slips, tow, and even the large pledgets of ointment next the sore, are removed. In a few cases, the parts are found united by the first intention: but for the most part, it is otherwise; there is a small quantity of matter over the surface of the stump, and the parts are red, tense, and painful to the touch, with a small separation between the edges of the divided skin, notwithstanding the plasters employed to retain them. As in this state, the plasters do no service, they should likewise be removed. The surface of the stump should now be covered with a pledget of the same ointment as at first; and a cushion of soft tow being laid over it, the cross slips of linen and the roller should be again applied, but without pressure.

In this manner the dressings should be renewed daily; when, by the seventh or eighth day, the inflammation and tension will in general be so far diminished as to admit of the ligatures upon the arteries being removed; at least they may now be gently pulled daily, till they yield; when they are allowed to remain longer, they prevent the wound from healing. The roller should be continued three or four weeks, changing it if it becomes soiled.

As soon as the sore is observed to be perfectly clean, with granulations sprouting out in different parts of it, we may with safety venture to complete the cure, by drawing the edges of the wound together with adhesive plasters. By this management, even the largest stumps will, for the most part, be healed in the course of three or four weeks.

OF AMPUTATING THE LEG.

In amputating the thigh, as much of the limb should be saved as can be done with safety; for the longer the stump, the more utility is derived from it: but the leg may be either taken off directly below the knee, or near the ancle, if the disease permits. In the first case, the few inches of the leg left, is usually turned under, and the joint of the knee placed in the box of a wooden leg; thereby precluding the use of the knee joint, and making the leg stiff and clumsy; but in the other case of amputating near the ancle, or below the calf, a cork leg, or machine, may be fitted to the stump, and used for walking, with so little deformity as hardly to be noticed. Whenever, then, the leg can be amputated in this last place, I would certainly recommend it; not only because it leaves it much more neat and convenient, but because, in that place, the leg being much smaller, the operation is more safe, and the wound more readily healed.

When we are prevented by the extent of the disease in the leg, from amputating it below the calf, we are next to determine the most proper place for the operation.

The cure of a stump immediately below the knee, is always tedious, owing to the great extent of bone at this place, and the deficiency of soft parts; while in the operation above the knee, the sore will heal in less than half the time required in the other, if well managed. And in regard to the use of the limb afterwards, perhaps the latter is equally as convenient as the former. Upon the whole, then, it may be advisable that amputation immediately below the knee should seldom be practised. However, as it may sometimes be judged proper, I will briefly describe its peculiarities.

The patient being placed, as in the operation upon the thigh, the tourniquet should be applied a little above the knee, with the cushion upon the artery, in the ham. The skin should be drawn up as in the other operation, and the surgeon, standing on the inside of the leg, should make a circular incision down to the muscles, so far down upon the leg that when as much of the skin is separated from the muscles as will cover the stump, the muscles and bones may be divided immediately below the insertion of the tendons on the under side of the leg. The soft parts between the bones may be divided with some sharp pointed knife. The retractors, of leather or cloth, must now be applied, and the bone sawed through. What remains to be done is the same as directed in amputation of the thigh, and repetion is unnecessary.

In the operation above the ancle, the spot should be fixed upon that will leave the stump of the most convenient length for being fitted with a cork leg, or machine, resembling the other leg; and this place will be found about nine inches below the joint of the knee or at the foot of the calf. If the stump were left longer, the artificial leg would require to be made so large, in order to receive it, as to appear disagreeable in comparison with the other leg.

In addition to what I have said upon the method of amputating the leg below the knee, I may observe, that in operating above the ancle, it should be done exactly as I have advised in describing the amputation of the thigh; only in this situation, instead of muscles, we find a portion of both bones covered merely with skin and cellular substance; but as the cellular membrane is here sufficiently lax, and in greater quantity than in the upper part of the leg, it is not only more easily separated from the periosteum, but serves to give the bones a more complete covering; by which, when the operation is properly done, the cure for the most part, is accomplished in less than three weeks, and the surface of the stump is equal, and every where covered with sound skin.

OF AMPUTATING AT THE HIP-JOINT.

This operation, at best, is extremely hazardous; and I cannot conceive a situation in which a person may be placed, that should render this operation advisable, or necessary, (unless, perhaps, from gun-shot wounds;) for it will generally be found, that when life can, by chance, be saved by this operation, it might, with *proper means*, have been saved with far less risk, without it: and that where these proper means fail, the knife will also fail to a certainty. The parts are too important, and too near the seat of life, to be taken off with impunity. I shall, therefore, omit describing the operation.

Amputation at the shoulder-joint is also subject to the same difficulties.

OF AMPUTATING THE ARM.

The general observations made upon the method of amputating the leg and thigh, apply equally to the amputation of the fore-arm and arm. And it is only necessary, therefore, for me to observe, that in taking off the arm, no more of it should be removed than is diseased; for the longer the stump is, the more useful it proves; and the same attention should be given to saving the integuments for covering the sore, that is advised in amputating the leg.

OF ISSUES.

Issues are small artificial ulcers that we form in different parts of the body, for the purpose of procuring a discharge of purulent matter.

Issues serve as drains for noxious humors, and to draw away the determination from a more vital or important part; and I have found them to be of great utility in many cases, particularly in chronic affections of the head, and eyes, &c., when I place the seton in the back of the neck. Generally, it is not necessary that they be placed near the affected part; for as they prove useful by the quantity of matter they afford, it is of little importance where they are placed; and accordingly they may be inserted where the patient thinks it most convenient.

Some general rules should be observed in the introduction of setons. They should never be placed immediately above a bone thinly covered; nor directly above a tendon; nor very close to a large blood-vessel or nerve; nor upon the belly of a muscle. The best situation for issues is that space which lies between the tendons on the back part of the neck, where there is considerable depth of cellular substance; the middle of the upper-arm; and a considerable hollow above the bending tendon of the knee. They may likewise be inserted between the ribs, on each side of the back bone, in the lower part of the calf of the leg; or, in short, wherever there is a sufficient quantity of cellular substance for the protection of the parts beneath.

Issues may be formed in various ways: by corroding applications; by incision; caustic; or the insertion of a cord. This last is the most common. This cord should be of cotton or silk, and its average size, that of a common goose quill. It should be inserted with a large flat seton needle, and drawn through an inch or two, while four or five inches may be left hanging out at the other end. The irritation which the cord excites is soon followed by a plentiful discharge of matter, which may be increased or diminished at pleasure, by covering the cord daily, before it is drawn, with a mild or irritating ointment. The seton should be drawn the length of the wound. daily.

OF TAPPING IN THE CHEST.

The operation of tapping in the chest is always indicated where the action of the heart or lungs is much impeded by fluid collected in the cavity of the chest.

The different kinds of fluids met with in the chest, and requiring to be drawn öff by this operation, are serum, blood, pus, and air. The symptoms of each of these may vary according to the nature of the disease, or of the accident giving rise to their formation. But it is their effect on the motion of the heart and lungs, to which practitioners ought chiefly to attend ; and this will always depend more on the quantity than on the kind of fluid that is collected.

Collections of serum in the chest are frequently combined with dropsy in other parts ; but we often meet with it as a local affection ; and it is in this case chiefly, that any advantage is to be expected from an operation. These collections may take place in either, or both, of the cavities of the chest, and also in the enclosing membrane of the heart. Distressful symptoms accompany these collections ; but it requires much attention to ascertain their existence, and especially their situation, with sufficient precision to warrant an operation of such importance as tapping the chest.

A patient who complains of a sense of weight or oppression in the chest ; of difficult breathing ; of more uneasy sensations in one side of the chest, than in the other ; of being liable to sudden fits of starting during sleep, from fear of immediate suffocation ; and if, along with these, he is distressed, with a frequent cough ; if the pulse is small and irregular ; and if a dry skin, scarcity of urine, swelled limbs, and other symptoms of dropsy take place, little doubt can remain of water being collected in some part of the chest. A sense of undulation, as of water passing from one part of the breast to another, is sometimes observed by the patient, on rising suddenly from a horizontal posture ; and this may serve to assist in ascertaining the nature, as well as location, of the disease. In examining the chest, the patient should be uncovered. When the quantity of serum is considerable, it may be commonly discovered by placing one hand upon the front part of the ribs, near the breast bone, and striking with some force near the back bone with the other ; and if an undulation is perceived in one side of the chest, and not in the other, the seat of the disease is thereby obvious. But when the quantity of fluid is not great, this trial is not to be trusted. In this case, a person standing behind the patient, upon a chair. should be directed to take a firm hold of the upper part of the body, and to swing it repeatedly, with sudden jerks, from one side to the other ; and if water is contained in the chest, it will be found to undulate, and create a a noise.

In long continued collections of serum, the seat of it may sometimes be discovered by being more prominent than the rest of the chest.

When the disease is in the membrane of the heart, nearly the same symptoms take place as in other parts of the chest. But in this case, it is observed that the patient complains chiefly of the middle and left side of the chest ; and it may be mentioned as a characteristic of this shape of the disease, that a firm undulatory motion is perceived between the third, fourth, and fifth ribs, on every pulsation of the heart.

The above are the symptoms of serum, or water in the chest. The variations from these symptoms in other collections, are as follows :

When *blood* is collected in large quantities in any part of the chest, the breathing becomes oppressed, and the motion of the heart and arteries feeble and irregular. These, indeed, are symptoms which occur in every collection seated in the chest; but they arrive at a greater and more distressful height from blood, than from other fluids. The other symptoms are similar to the dropsy, above described, and need not be repeated.

Blood may be effused into the cavity of the chest, by wounds, splinters of fractured ribs, eating ulcers, or they may be ruptured by any violent exertion, particularly in coughing.

In collections of blood, a quantity of it is often brought up in coughing, which sometimes affords relief. But when the action of the heart and lungs becomes impeded by it, attempts should be made to draw it away by tapping. When the blood is found to be coagulated, so as not to pass off by a perforation, the case is difficult; and, perhaps, it would be best to trust its being absorbed, or coughed up; or it may be attempted to be discharged by injecting warm water, so as to dissolve the coagulated blood, sufficient to allow it to pass.

In empyema, or collections of pus, in the chest, the marks of oppression, &c., are very similar to the dropsical affection; but we are enabled to judge of the presence of this disease by its cause and the accompanying circumstances.

It may be laid down as a fixed principle, that inflammation is a necessary fore-runner of purulency; so that a collection of pus in the chest must be preceded by an inflammation of some of the parts. When, therefore, the symptoms of a fluid in the chest have not been preceded by inflammation, we conclude that they are not induced by purulent matter. But when a patient has previously suffered an attack of the pleurisy, inflammation of the lungs, or any other part in the chest; if he has for some time complained of a fixed pain in some part of the chest, attended with heat, a quick pulse, and other symptoms, and is at last seized with oppressive respiration; an inclination to sit in an erect posture; with a total inability of lying on the sound side; a constant tickling cough; frequent rigors or shiverings; and especially if these symptoms are accompanied with an enlargement of the affected, or with a soft fulness of the part, in which the pain was first seated; we may conclude with much certainty that a large collection of matter is formed.

The existence of these collections in the chest being ascertained, and their seat discovered; and if the medicines employed in the cure shall fail; and if it is evident that the patient must die, if the operation is delayed, it ought certainly to be advised without further delay; tapping in the chest is no doubt an important operation, and ought not to be advised but in real danger. But there should be no hesitation in resorting to it, when the symptoms are hazardous, and can be removed by no other means; and the method of doing it, is this:

The patient should be laid in a horizontal posture, with the side in which the perforation is to be made laid over the bed; when in this situation, the skin upon that side should be pulled upwards by an assistant, and held in that situation during the operation; and the surgeon should now, with a scalpel, make an incision two inches in length between the sixth and seventh ribs, in the direction of

these bones, and at an equal distance between the breast bone and back bone, taking care to avoid the under edge of the upper rib, on account of the blood vessels running in its groove. The length of the incision may be shortened, as the knife passes through the rib muscles, to an inch in length. On the pleura being laid bare, it should be slowly and cautiously divided, in order to avoid all risk of wounding the lungs, lest they should, at this place, happen to adhere. If they do not adhere, the water, or matter, will rush out with much force, as soon as an opening is made in the pleura; but if the pleura adhere to the lungs at this place, the incision must either be carried forward an inch or two nearer the breast bone, or another opening will be required, either an inch or two higher or lower in the chest. As soon as the contents are found to flow, a silver tube should be introduced at the opening, by which the discharge will be more easily completed, and more readily stopped, if found necessary, by the patient becoming faint. By doing it in this manner, air is prevented from finding access to the cavity of the chest.

When the water collected is not in any great quantity, it may commonly be drawn off at once; but as, from the structure of the chest, we cannot use compression, when much water or matter is collected, partial evacuations ought to be made, at longer or shorter intervals, according to circumstances. For this purpose, and in order to regulate the discharge, the tube should be secured by a ribbon or cord fastened to it, and then tied round the body, and stopped from time to time with a cork. A pledget of emollient ointment should be laid over the wound, and the whole being secured with a napkin and bandage, the patient should be laid to rest. After a suitable delay of a day or two, an additional quantity may be drawn off; and by thus taking it away gradually, all risk of injury may be avoided.

In this manner any quantity of matter may be drawn from the chest with safety; and the patient being now relieved from the great distress under which he laboured, the tube may be withdrawn, proper means being, at the same time, employed for preventing a relapse of the disease.

When both sides are affected, and the serum is collected in both cavities of the chest, it cannot all be drawn off by one operation. In this case, therefore, after being drawn off from one side, the operation should be repeated on the other; but some risk might occur from performing it in both sides nearly at the same time, by the external air getting access at once to both cavities of the chest; for, with the utmost caution, it is impossible altogether to prevent the air from finding access, either by the wound or tube, to the surface of the lungs; and if both cavities should at the same time be filled with air, the lungs would be as much oppressed as they were before with the water. Before proceeding to the operation on the other side, therefore, the air received in the first opening should be expelled as much as possible, which may be done in this way: immediately after the tube is withdrawn, let the patient draw his lungs full of air. This will expel a considerable part of what was collected between the pleura and the lungs, by the incision; and if the skin, which was retracted before the operation, be instantly drawn over the sore, and pressed down by an assistant during expiration, all access will

thus be prevented to the external air; and by this being frequently repeated, almost all the air thus collected, will be expelled; after which the skin must be drawn over the wound, and with dressings, the incision will close up without further trouble. Air may also be drawn from the chest, by means of an exhausting syringe.

Air collected in the cavities of the chest may not only prove hurtful, by impeding the motion of the lungs, but it must likewise do harm by that tendency to inflame, which it creates in parts naturally secluded from the air. This circumstance, therefore, merits particular attention.

When the disease is seated in the membrane of the heart, it is in some instances, so much distended, that it is easily distinguished on examination. Upon making an opening in the left side, between any two of the ribs, from the third or fourth to the seventh or eighth, and within five or six inches of the breast bone, we can never fail in this distended state to meet with it; and when brought fully in view by the pleura being freely divided for the space of an inch or two, the best method of finishing the operation is to push a small trocar into the membrane. If the quantity collected is small, it may all be drawn off at once; but when considerable, the discharge should be frequently stopped for a few minutes together, in order to prevent the inconveniences of too sudden and free a flow of the whole quantity.

These general directions are applicable to the evacuation of all watery collections in the chest A few additional directions therefore, for the different cases, may be necessary.

When blood is collected in the chest, produced by a ruptured blood-vessel, from a fractured bone, or some extraneous body pressed into it, the incision should be made as near the part affected as possible, that the opening may serve not only for discharging the blood, but for extracting such portions of bone, as are found to be detached, or any foreign bodies that may be met with. And, again, when a wound made with a sharp pointed instrument is the cause of the collection, it will generally be sufficient merely to enlarge the wound if necessary.

When pus is collected in the chest, or abscesses formed, it may be remarked, that when the seat of an abscess is pointed out, either by a long continuance of pain in any one point, or by matter being distinguished between two of the ribs, that this is far the best direction for the place of incision. But when no such mark is observable, the place advised in the general direction is the most proper.

In abscesses in these parts, the matter is commonly first formed in the substance of the lungs, and afterwards discharged into one or other of the cavities of the chest. It sometimes happens, however, that large quantities of pus, form between the pleura and surface of the lungs, without any apparent affection of that organ; and seem to proceed from any inflamed state of the surface of the pleura. These collections, however, seldom continue long without producing ulceration; and when ulceration has taken place, the discharge of matter that succeeds to the operation of tapping, generally continues for a length of time.

In this disease medicines should be used for cleansing the system

of impure humors, and prevent the collection in the chest; otherwise the cure will be tedious, if at all accomplished.

Air, collected in either of the cavities of the chest, excites the same symptoms of oppression on the lungs and heart, as those arising from water, blood, or matter; its removal, therefore, is equally necessary.

Air may pass into the chest from a rupture of the investing membrane of the lungs, which may occur in coughing, &c.; or, from an erosion of the surface of the lungs by ulceration; or, by wounds penetrating the lungs; or from the point of a fractured rib, lacerating the lungs, which is the most frequent cause.

The symptoms produced by effused air in the chest, differ only from those of water, in their arriving more quickly to an alarming height: instances have occurred of death being induced in the space of a few hours, from the fracture of a rib, merely by air collecting in large quantities between the pleura and the lungs. In some, perhaps, in the greatest proportion of all that occur, along with this collection of air in the chest, the cellular substance of the breast becomes inflated; and if means are not soon employed to prevent it the air insinuates through every part of the body. It is truly astonishing to observe how quickly a fractured rib, when it wounds the surface of the lungs, will in some instances induce the most alarming symptoms. The patient at first complains of a tightness in the breast, attended with oppression in breathing, along with pain in the parts chiefly affected. This difficult respiration becomes more distressful. The patient cannot breathe in a recumbent posture, and is always easiest when erect and leaning somewhat forward; the face becomes flushed and swelled; the pulse is commonly feeble, and at last it becomes irregular; the extremities become cold, and if relief is not obtained, the patient is at last carried off with every mark of suffocation.

Windy swellings of the external parts of the chest sometimes take place here, which may be easily distinguished from watery effusions by the crackling noise produced on pressure.

The practice I would incline to follow, is this. In the first place, make several incisions in the course of the swelling, each half an inch in length, and of such a depth as to pass entirely through the skin into the cellular membrane; and if these do not afford relief, which, however, they frequently do, proceed immediately to perforate the cavity of the chest in the manner I have advised, as near as possible to the injured part if this be not near the back bone; in which case the perforation should be made in the most depending part of the chest, as I have advised in collections of serum, &c.

TAPPING OF THE ABDOMEN.

It is the effect of various diseases to produce collections of fluids in the cavity of the abdomen. Commonly these collections can be removed by internal medicines, particularly if taken in due time; but in some cases, from the pressure of the accumulated fluid upon the bowels, we are obliged to employ the operation of tapping.

There is naturally secreted into the cavity of the abdomen, a se-

rous exhalation, for the purpose of lubricating and keeping moist the surface of the intestines. Various causes may concur to produce a morbid increase of this secretion; and whenever the quantity collected in the abdomen is large, it constitutes dropsy in the belly.

This variety of dropsy often accompanies a general disease of the system, being frequently combined with swelling of the lower extremities. But in some instances it is local, and is evidently induced by compression of the lymphatics; most frequently by schirrous swellings of some of the viscera, commonly an enlarged state of the liver.

The presence of a fluid in the cavity of the abdomen, is known by the swelling that takes place; by a sense of tightness all over the belly; by the breathing being difficult and laborious, when the patient is in a horizontal posture; and by a sense of fluctuation being communicated to the fingers, placed on one side of the belly, when it is forcibly struck on the other. A concurrence of these circumstances will always, to a discerning practitioner, point out the real nature of the disease. But a further confirmation is obtained of it when the patient complains of thirst, a dry skin, scarcity of urine, and other symptoms of dropsy.

When the swelling is found to extend equally over the abdomen, the serum is commonly diffused among the different viscera, and is contained within the lining membrane only. It sometimes happens, however, that it is collected in different bags, or perhaps in one or both the ovaria; in which case the tumor is not commonly so equal, nor the fluctuation so distinctly perceived, as when the water flows freely through the whole cavity This circumstance of fluctuation depends also on the consistence of the fluid; for we sometimes find it thick and gelatinous, whilst most frequently it is thin and watery.

Diuretics and other evacuants in the cure of local dropsical swellings, rarely prove useful, unless the patient be strong and of good constitution. When this is the case, it may be useful to give diuretics and drastic purges, as gamboge, in small doses, which will often bring away immense quantities of water; but it can be advisable only in few cases. The principal object, therefore, to be kept in view here, is, to discharge the water collected in the belly, by tapping, as soon as its existence is ascertained, and it resists the operation of medicine; while the most effectual remedies should, in the mean time, be employed for preventing a return of the disease. This is sometimes impracticable: but often cures may be accomplished; and would probably happen more frequently if the fluid collected in the belly was more early discharged. In general this is delayed too long; for the bowels must surely be greatly injured by being soaked so long in water, as usually happens in dropsy in the belly before the operation is advised. This too, is the more improper, as the operation of tapping is in itself, exceedingly simple. It excites little pain; and any danger attending it does not proceed so much from the nature of the operation, as from the constitution being in general much debilitated by the long continuance of the disease before it is performed; which renders an incision, in extreme cases, liable to mortification from the cold and inactive state of the parts.

Early tapping, however, is never necessarily attended with danger. A large dropsical collection should never be discharged suddenly; as fainting, and even death may ensue. This, however, may be in a great measure guarded against, by applying bandages tightly and equally over the whole abdomen. These should be drawn tighter as the contents are emptying, in order to support the bowels with an equal pressure. When this is properly done, almost any quantity of water that the abdomen may contain, may with safety be drawn off. These bandages should be continued several days after the operation.

The instruments for tapping generally used, are, the trocar, a round instrument, with a three-edged point; and the large seton lancet.

In performing the operation, the safest and best place seems to be at a point lying at nearly an equal distance between the navel and the centre of the spine of the haunch bone. No large blood vessels can be wounded here; and the coverings of the belly in this place are somewhat fleshy, and heal more readily. None of the intestines can in this situation be readily injured; and when the patient is laid in a horizontal posture, which ought always to be the case, during the operation, this point will be found to be more depending than any other.

The place for the incision being determined on, it should be marked, and the bandages applied to compress the abdomen, leaving an opening for the incision. These bandages, or straps, should be confined with buckles, that they may be drawn up when necessary. The patient being laid in a horizontal posture, with his head elevated, and his side lying over the side of the bed, the surgeon, if he use the trocar, will take it in his right hand; and fixing the head of the stilette in the palm of his hand, while his fore-finger directs the point of the instrument, he is now to push it forward till he finds that the end of the canula, or tube is entirely through the muscles, and lodged in the cavity of the abdomen. The stilette is now to be withdrawn and the tube allowed to remain as long as the discharge continues, care being taken to pull the bandage gradually tighter as the water flows off; or, if the patient, notwithstanding this precaution, shall become languid, a total stop should be put to the discharge for a few minutes. If a lancet is used, the incision should be carefully made, by repeated strokes, till the opening is sufficiently large and the matter flows freely; a silver tube should then be introduced, with a perpendicular wing around it to prevent its slipping into the abdomen, where it should be confined with adhesive plaster.

The discharge is sometimes stopped before the swelling is much diminished, by portions of the caul or intestines stopping up the end of the tube; this can easily be removed with a blunt probe. But this early cessation of the discharge may take place in consequence of the serum being collected in particular bags, having no communication, by which only one of them is emptied: in such circumstances, the tube must be withdrawn, and the wound being dressed with a pledget of any simple ointment, the operation may be renewed, either immediately or on the following day, on the opposite side of the abdomen, or in the most depending part of it.

When the dropsical collection is large, and it is expected that it will collect again, after an evacuation, the tube may be suffered to remain tightly corked and secured against the entrance of the air, for a few days, and the water drawn off as it collects.

Dropsical swellings of the ovaria exhibit nearly the same appearances with bag dropsies of any other kind: though it sometimes attains to an enormous size, and is filled with folds or lattices This disease of the ovaria comes on more gradually than other dropsies, and does not appear to injure the constitution so much, the water not being in contact with the intestines The propriety of drawing off the contents by tapping, is equally as obvious in this as any other shape of the disease.

The serum being all drawn off, and the opening dressed in the manner before mentioned, the bandage must still be continued sufficently tight for preventing those distressful feelings which the sudden discharge of it would otherwise be sure to induce: and there is even reason to think that the support which the bandage affords to the weakened parts, may have some effect in preventing a return of the disease; but when, notwithstanding this, and of such internal remedies as are employed, the water is found again to collect, the operation requires to be repeated whenever the swelling becomes large.

Dropsy is, perhaps, the most frequent variety of tumor to which the abdomen is liable; but in some instances, instead of water, tumors of the abdomen are found to contain air, constituting a disease, termed tympanites.

The effect produced by this upon the breathing, is nearly the same as what ensues from collections of water; but the swelling itself is much more tense, and affords to the touch and pressure nearly the same sensation as is received from a bladder filled with air. In a great proportion of cases of tympanites, the air after death is found in the intestines; which, in some instances, have been inflated to a most enormous size. This I suppose to proceed from the intestines losing their tone: but there is another variety of the disease, in which the air is diffused in the cavity of the belly, in a similar manner to water in the dropsy; this however seldom happens, and takes place from a hole in the intestines, by which the air escapes.

In either of the above cases, the remedies for flatulency are to be used; these failing, tapping must be resorted to, so soon as the life of the patient becomes endangered.

This may be done in the same manner as directed for the dropsy; taking care to make the incision of a smaller size, and to employ pressure in the same guarded manner as when the tumor is formed by water; for it is equally necessary.

After the operation, whether in dropsy or tympanites, it may be well to rub the abdomen from time to time with astringent spiritous applications. This cannot be attempted, however, for two or three days, as the bandage must not be removed; but this being elapsed, the bandage may be removed daily, for fifteen or twenty minutes, for the purpose of rubbing the abdomen with the above applications, care being taken to renew the bandage as soon as the friction is over.

DIVISION OF THE BRIDLE OF THE TONGUE.

We sometimes find in children at birth, that the tongue is too closely tied down at the bottom of the mouth, owing to the bridle being either too short, or continued too near the point of it. The remedy is obvious; this membrane, or ligament, must be divided, so as to allow the tongue to have free motion; and it should be done as soon as it is observed to be necessary, otherwise the suckling of the child may in the first place be impeded, and afterwards an interruption of speech may arise from it.

It is proper, however, to observe, that it is not a frequent occurrence; for although nurses often speak of children being tongue-tied, &c., that either do not suck readily, or are backward in speaking, yet they are in reality seldom met with.

The division of this bridle is an easy operation, but it must be done with attention, otherwise the contiguous blood vessels might be injured, by which such a quantity of blood might be lost as an infant could not easily bear; it is commonly done, either with a scalpel or common scissors. The child being laid across the nurse's knees, the surgeon should open the mouth and raise the tongue with the fingers of his left hand, while with the other he must introduce the instrument, and divide to any necessary depth.

DIVISION OF THE SALIVAL DUCT.

The salival gland of each side transmits the saliva, or splittle, which it secretes, by a duct of the size of a crow's quill, which after passing over part of the chewing muscle, penetrates the compressor of the cheek, in an oblique direction, and empties itself into the mouth, about the middle of the cheek.

In opening abscesses, or extirpating cancers from the cheek, as well as by various accidents, this duct is apt to be cut; and if the two divided ends of it be not retained together till they heal, the saliva which it ought to convey to the mouth, is poured over the cheek; and the discharge being constantly kept up, the sore is prevented from healing, and a fistulous opening produced, corresponding to the size of the duct As the sore commonly heals internally, the discharge would necessarily continue during life, if means were not used for preventing it.

In recent divisions of this duct, the best practice is, to lay the two ends of it exactly together, and to retain them in this situation till they unite, by adhesive plasters, or if this fails, by twisted suture, when the retraction of the divided muscle is considerable; but when this has either been neglected, or fails of success, as the distant extremity of the duct soon heals and is entirely obliterated at the divided end of it, the only way in which a cure can be obtained, is, to make an artificial opening into the mouth, and endeavor to form an union between it and the upper part of the duct leading from the gland.

In making this passage, it ought to be carried as nearly as possible in the direction of the natural duct; and in order to insure success, it should be rather of a larger diameter than the duct. For this pur-

pose, a sharp pointed perforator of a proper size, should be entered on the other side of the sore, exactly opposite, and contiguous to the under extremity of the upper part of the duct; and being carried somewhat slantingly, it must in this manner be made to penetrate the mouth. This being done, a piece of leaden probe, nearly the size of the perforator, should be introduced along the course of the newly formed opening, and retained in till the sides of it become callous; when the lead being withdrawn, the end of the duct should be drawn into contact with the opening, by means of a piece of adhesive plaster, and kept in this situation till a firm union has taken place. After taking out the lead, it will forward the cure, to make the end of the duct and of the newly formed opening raw, with the edge of a lancet, before bringing them together Till a firm adhesion takes place between them, the patient should be directed to live upon spoon meat; to speak little or none, and to make as little exertion with his jaws as possible.

In this manner, sores, which would otherwise continue to discharge saliva for life, may be easily healed, with scarcely any mark of their having ever existed.

CUTTING OUT A CANCEROUS BREAST.

Cancer has been known to attack almost every part of the body; but we meet with it more frequently in the breasts of women, than in almost any other part.

In another part of this work, I have entered fully into the consideration of cancer and its medical treatment. I shall, therefore, confine myself to the description of the operation of taking out a cancer of the breast. And in doing this, I would not be understood as expressing my approbation of this method of curing cancers, particularly to the extent that it is carried at the present time; I only shew the manner of doing it, that the student may know how it is done; leaving it to his judgment to determine the necessity of ever resorting to it.

A real cancer is a formidable disease; wherever it is seated, its consequences are to be dreaded; but more especially, when fixed on one or both of the breasts. Various causes have been assigned for cancer proving more malignant in this situation than in others; but the obvious reason of it is, that cancers, being very commonly seated in the glands, and the breast being entirely glandular, cancer is necessarily more apt to form in it than in parts not so extensive.

In every surgical operation, it should be an established maxim, to save as much sound skin as possible Such portions of the common teguments as are diseased, or that adhere firmly to the parts below, ought certainly to be taken away; but it can never be proper to remove more than this; for it is now universally known, that the true skin is never regenerated; and when destroyed, that the parts underneath are afterwards covered with thin scarf skin only. This, however, is not the only objection to an extensive removal of skin, in every operation, where much of it is destroyed, the wound that remains is necessarily much more extensive, and the cure, therefore, more tedious, than when little or perhaps no skin has been taken

away. Indeed, this is so much the case, that in operations where no skin has been removed, cures will sometimes be accomplished in a few days, which, by the removal of much skin, in the usual way of performing the same operation, would be protracted to many weeks or months. No skin need be removed on the supposition that, from its previous distention, there will be a superabundance of it; for its elastic power is such that it will contract to the size of the sore.

In proceeding to the operation, the patient must be firmly seated in an arm chair, her head being supported with a pillow by an assistant behind, whilst her arms are properly secured by an assistant on each side of her; or she may be placed upon a table, which answers better than any other position; in this manner she is more easily secured; faintings are less apt to occur, and the surgeon proceeds with more ease through every part of the operation, than when the patient is seated in a chair. But in whatever position she may be placed, the surgeon should for certain, be seated; surgeons, indeed, perform this operation most frequently while standing before the patient; but no operator will ever attempt it in this manner, who has once experienced the advantages that result from doing it in the manner I have advised.

In the first place, I shall suppose the operation to be performed for a schirrus of the breast, or mamma, while the skin is still sound, and without adhering to the parts beneath. In these circumstances, an incision should be made with a scalpel, through the skin and cellular substance, from one extremity of the tumor to the other; taking care to direct the scalpel so that it may avoid the nipple, by carrying it an inch or so to one side of it. When the disease has extended, as it sometimes does, beyond the mamma, towards the breast bone, as this commonly throws the longest diameter of the tumor across the body, this external incision should be made in a direction corresponding to the length of the tumor, by making it to commence at one side of the mamma, and terminate at the other; but when the mamma alone is diseased, the external incision should run in a perpendicular direction, commencing at the upper part of the tumor, and finishing at the most depending point of it. By this means, any matter that may form during the cure, is freely discharged; which does not happen when the incision runs in a transverse direction, unless the lower portion of the teguments is afterwards divided from above, downward; which in such cases, should always be done; for, although in some instances, a cure is easily obtained, even where this precaution is not kept in view; yet, in general, some inconvenience would ensue from a neglect of it.

The skin and cellular substance being thus freely divided, are now to be separated from the diseased parts below by a slow and steady dissection; and this being accomplished, the teguments should be kept asunder by assistants, till all the glandular part of the breast is dissected from the breast muscle, and other parts with which they are connected. With a view to preserve the breast muscle as much as possible from being cut by the scalpel, the arm of the affected side should be extended somewhat above a horizontal direction, by which means all the fibres of this muscle are kept in a state of extension. It often happens, indeed, that the diseased parts adhere to

the breast muscle; and, in some instances, even to the bone membrane of the ribs. In such cases, as all the diseased parts must be removed, we should not hesitate to use every necessary freedom with the breast muscle, as well as every other part to which the mamma adheres; but whenever the removal of the disease can be accomplished without injuring these parts, it ought undoubtedly to be done.

On the mamma, or breast, being removed, the operator should examine with much accuracy, not only the surface of the sore, but the parts beneath the edges of the divided skin; and if any indurated glands are discovered, they should all be removed. In this part of the operation, much care and attention is requisite: for unless all the diseased glands are removed, no advantage will be derived from it.

I have desired that the whole glandular part of the mamma should be removed. Even where a small portion of it only is diseased, the whole should in general be taken away; for no good purpose can be answered by a portion of it being left; and in many instances, where this had been done, mischief ensues from the disease making its appearance again in some parts of the glands which remain. When, indeed, it is found that a single loose gland only is diseased, it may be taken out without injuring the rest of the breast; but whenever the disease is extensive, the whole mamma should be removed.

The next step in the operation, is, to secure the divided arteries; and it should always be done with a tenaculum, or a small sharp pointed hook. As the arteries of the mamma are frequently small and numerous, much attention is necessary to discover them All the coagulated blood should be effectually cleared away with a sponge and warm water; and if the patient is faint, a glass of wine or some other cordial should be exhibited; by which means, small branches of arteries are discovered, which would otherwise escape notice, and which, if neglected, might induce much hazard and distress.

The blood vessels being thus secured, and the surface of the sore cleared of blood, the divided teguments should be brought together; and in order to secure them with accuracy in their situation, ligatures should be introduced at those points where they are most likely to answer the purpose. Slips of adhesive plaster may sometimes be employed instead of ligatures, in slight cases.

In securing the teguments in this manner, care must be taken to leave all the ligatures of the arteries hanging an inch or two out of the wound, so that they may be withdrawn in a few days; which in general may be easily and safely done when they have been applied with the tenaculum.

In order to promote the adhesion of the teguments to the parts beneath, moderate pressure should be applied over the whole by means of the napkin and bandage. But before applying it, the parts should all be covered with a piece of soft lint, spread with any emollient ointment, and over this there should be a thick compress, either of lint, tow, or soft old linen.

In this manner, when no portion of the teguments has been removed, as the whole sore will be covered with skin, a cure will be obtained by a process, which surgeons in general have termed. *the first intention;* that is, without the formation of matter.

But it does not often happen, that the operation is advised, whilst this mode of practising is admissible. In general, before a practitioner recommends amputation of a breast, and still more frequently, before a patient consents to it, a considerable portion of the external teguments are so much diseased, as to render it necessary to remove them along with the glandular part of the mamma; or if the skin is not actually diseased, it commonly adheres so much to the most prominent part of the breast, that it cannot be separated from it. In either of these circumstances, some portion of the skin must be removed along with the mamma; and the easiest method of doing it is this: a longitudinal incision should be made in the manner I have advised, through such parts of the teguments as are perfectly sound, while that portion of the skin that is diseased, or which adheres firmly to the glandular parts of the breast, should be separated from the sound skin by a circular or oblong incision, with which the longitudinal cut ought to communicate; and this being done, the operation is to be finished by dissecting off every part that is indurated, along with that portion of the skin which in this manner has been surrounded with an incision, such as I have mentioned.

In the after state of the sore, a material difference takes place between the operation that I have now described, and that in which there is no necessity for removing any portion of the skin. Where none of the skin is removed, the divided teguments, on being drawn together, cover the sore completely; an adhesion commonly takes place over the whole; and the cicatrix that ensues is inconsiderable; but when any portion of the skin is removed, a sore is always left, which not only renders the cure tedious in proportion to the quantity of skin that is taken away, but the cicatrix is necessarily of the same size; by which much tenderness and irritability is left in the site of the disease, which has some influence in making it return.

The sore that remains after the operation, should be treated with the mildest dressings. When any hemorrhagy takes place from the surface of the sore, and is not removed, on the larger arteries being secured with ligatures, dry lint should be applied for the first dressing; but for all the after dressings, lint covered with any emollient ointment should be preferred. Mild emollients never give pain, which dry lint is apt to excite.

I have hitherto been supposing that the disease occupies the mamma only; but the lymphatics leading from the breast to the arm-pit, are also often indurated, and likewise the glands in the arm-pit itself. In some instances, too, a number of diseased glands are found to run from the breast to the collar bone, and to spread in considerable clusters along both the upper and under edges of that bone. In such circumstances, the amputation of the mamma itself must be managed in the manner I have already advised; but besides this, an incision should be made through the skin and cellular substance, from the further extremity of every cluster of hardened glands, and made to terminate in the principal cut produced by the removal of the mamma. Thus, when the glands in the arm-pit are enlarged, although they might frequently be pulled out, either separately or connected together, by a hook insinuated below the sound skin, at the sore in the breast:

yet it answers the purpose better, to lay the glands first bare by an incision, in the manner I have advised, and then to dissect them cautiously out with the scalpel. In the course of the dissection, a good deal of assistance may be obtained from passing a strong ligature through the largest gland; by which the whole cluster with which it is connected, may be elevated from the parts below, so as to admit of their being more easily cut out with the scalpel; and it often happens, that these indurated glands run so near to the armpit artery, as to render it highly proper to use every probable means for rendering the dissection safe and easy.

In like manner, when a cluster of diseased glands is found to extend towards the collar bone, or in any other direction, after the teguments have been freely divided, the glands themselves should be totally removed; and both here and in similar affections in the armpit, the divided teguments should be brought together and retained in their situation, either by means of compression, or, when this is not sufficient, by the introduction of one or more sutures.

The point that I more especially wish to inculcate, respecting this operation, is, the propriety of saving as much skin as possible. The necessity of this had rarely, if ever, occured to our forefathers; and accordingly, the common practice has been, to remove all the skin corresponding to the morbid parts underneath; by which much unnecessary pain is produced; a very extensive and ugly sore is left, and the cure is always tedious. Instead of which, although it may not in every instance, be practicable by the means I have advised, to cover the sore entirely with skin; yet, in all cases, a considerable part of it may for certain receive this important advantage; by which the extent of the sore will be much diminished; a cure will be proportionably sooner effected; and by the cicatrix being less extensive, the risk of the patient in future will probably be less also.

OPENING THE WINDPIPE.

When respiration becomes much obstructed, and endangers the life of the patient, and when this appears to proceed from a local affection, or obstruction of the upper part of the windpipe, an operation may become necessary for relief

This operation has in general been supposed to be of a more dangerous nature than it really is; and this has, no doubt, often prevented it, when it might have saved life.

The causes that may render an opening of the windpipe necessary, are:

1. Spasmodic affections of the funnel of the windpipe, when they threaten suffocation: this may happen from catarrh, or acid mucus; or from hard substances passing into the windpipe, which, even though their size would not choke the passage, may, by their irritation, cause a spasmodic contraction.

2. A piece of bone, flesh, or any other firm substance, being lodged in the funnel, or upper part of the food canal, and too large to pass down to the stomach, may, by its bulk, compress the back and membranous part of the windpipe in such a manner as to produce a total obstruction of the passage of air into the lungs. Instances also have occurred, of suffocation being produced by a piece of flesh

lodging in the upper part of the funnel of the gullet; for in such instances, it commonly happens, that patients are irrecoverably dead, before any assistance can be procured.

3. Polypous excrescences of the nose, have been known to fall into the funnel, so as to endanger suffocation; and tumors that originate from the veil or upper part of the funnel, are attended with this effect.

4. Tumors that are firm, particularly those that are of a schirrous and fleshy kind, even when seated externally, have been known to compress the windpipe so much as almost entirely to obstruct respiration; when so situated as to cover all the accessible parts of the windpipe, which is often the case, this operation is inadmissible.

5 Inflammation of the tongue may arrive at such a height as entirely to obstruct the passage to the fauces; and this most frequently is the effect of mercurial irritation, or salivation, which, when carried far, induces such a tumefied state of the glands of the mouth and throat, as to produce suffocation.

6 Swellings of the almonds of the ears and contiguous parts, may become so large as to obstruct respiration; thereby rendering an operation necessary.

When, from any of these, or other apparent causes, breathing becomes so much obstructed as to endanger the patient's existence, and other means failing, the operation of opening the windpipe should be immediately advised; and the method of performing it is this:

Whenever it is necessary to have a patient firmly secured during an operation, he should always be placed upon a table; and this is a matter of much importance in this operation. The patient being laid upon a table, with his head drawn back, and limbs secured by an assistant, a longitudinal incision should be made with a scalpel through the skin and cellular substance on the middle and lower part of the windpipe, beginning at the lower part of the shield cartilage, and proceeding downwards for the space of an inch. The breast and shield muscles are thus brought into view; and being separated from one another, a considerable part of the shield gland is in this manner laid bare. As this gland is plentifully supplied with blood vessels, and as the division of any of these always proves troublesome, and in some instances, even dangerous, it should be carefully guarded against. This may commonly be easily done by avoiding the lower portion of the gland, where the two lobes of which it is composed, unite, and finishing the operation at the upper part of it where they separate. In order, too, to guard as much as possible against the inconvenience arising from the division of the arteries of this gland, the incision should be slowly made; and, as the arteries are so large as to be preceptible to the naked eye, they may, with due care, be avoided.

The cellular substance lying between these portions of the gland being cautiously removed, the windpipe is thus laid bare; and if no large blood vessel has been divided, the operation may be immediately finished, by making an opening between any two of the cartilages; but if any large artery has been cut, it must first be taken up. The incision between the cartilages may be made with a lancet, and should be of such size as to admit a tube or canula of silver,

through which a quantity of air may be transmitted, fully sufficient for the purposes of respiration; or, the perforation may be made with an instrument similar to a flat trocar; and which is perhaps the neatest way, as in using this, the blood is not so liable to get through the opening into the windpipe, causing convulsive cough.

Before introducing the tube, it should be passed through the centre of three or four thin compresses of linen; these not only serve to cover the pledget of emollient ointment with which the wound should be protected, but by taking off one or more of them, which may be easily done by cutting up their sides with a pair of scissors, the length of the tube may be thus augmented at pleasure; and which in the event of the parts about the wound becoming swelled, is a very important precaution; for when neglected, a very slight swelling on the sides of the sore will throw the tube out. For this purpose, too, the tube should never be less than two inches long: when first introduced, just as much of its extremity should be left uncovered by the compresses as admits of its passing easily into the windpipe. If any swelling takes place, one, two, or more plies of the linen being cut off, will still admit of the tube penetrating to the same depth.

A double tube, that is, one within the other, is preferred by many. When one tube only is used, it is apt to fill with mucus; and as it must frequently be taken out for the removal of this, respiration in the meantime is apt to be impeded, but when a double tube is employed, the inner one can be easily taken out, cleaned, and replaced, while the other is left in the opening. When, therefore, the outer canula of the tube is properly fixed, the inner one having been previously adapted to it, and the opening in the canula covered with a piece of crape, or fine muslin, to prevent the admission of dust, the operation is in this manner completed.

As the intention of this operation is to obviate the inconveniences arising from an obstructed respiration, it is evident that the canula should be continued in the wound as long as the cause that gave rise to it exists. If a piece of bone or other substance has passed into the windpipe, and if this cannot be extracted at the opening newly made, a curved probe should be introduced at it in order to ascertain the situation of the extraneous body: and this being done, another perforation must be made directly above it. In this manner, this cause of the disease may, in some instances, be removed, and when obstructions of a different kind are found to take place, the means best adapted for their removal should be immediately employed. But till the breathing becomes perfectly easy, the tube should be continued; and when, at last, it is judged proper to withdraw it, the skin should be immediately drawn over the orifice, and retained there with a piece of adhesive plaster, by which means a cure of the sore will soon be obtained.

OPENING THE GULLET.

Substances are frequently taken into the funnel, which in passing into the gullet, are too bulky to be forced down to the stomach by the muscular exertion of the parts at which they stop. When any

part of substances in this situation can be observed on looking into the funnel of the throat, they are easily removed by common forceps; but when they have passed entirely out of the funnel and are lodged deep in the gullet, this cannot be done; in such circumstances we are obliged either to allow the substance to remain where it is fixed; to push it into the stomach; or to extract it by laying the gullet open.

When the substance resting in the gullet is of a soft nature, as bread, cheese, or flesh, the easiest and best method of getting free of it is to push it into the stomach with an instrument, termed a probang, which is made of a smooth piece of whalebone, fifteen or sixteen inches long, and a soft piece of sponge fastened to the end of it. This is much safer and easier than to bring it up, as is frequently advised, by a strong emetic; for when this does not succeed, the exertion of vomiting, in this obstructed state, is apt to do harm.

But when a pin, a piece of sharp bone, or any other firm substance, is fixed in the passage, we should by no means attempt to push it down; for, by doing so, if it does not go into the stomach, any point or roughness with which it is furnished, might be pushed directly into the substance of the gullet.

It is necessary to observe, however, that in every case, where the pain is not great, the breathing not much affected, and the passage still so pervious as to permit the food to get down into the stomach, no attempt should be made for removing it; for we know, from experience, that in most instances every thing of this kind is at last carried down, either by the action of the gullet, by some degree of dissolution taking place in the substance, or by some partial suppuration taking place, which loosens it.

But when the obstruction is complete, and cannot be removed by other means, it becomes necessary to attempt to take it out by incision. As the gullet lies deep, being covered with the windpipe, and as different blood vessels and nerves of magnitude and importance lie near it, it has always been very justly considered as dangerous to make an incision into it. But although no practitioner would advise this operation without some reason of importance, yet in such instances as those to which I allude, where much danger must ensue from any material interruption being formed, either to the passage of the food or air, it would surely be preferable to give the patient a chance, even from this doubtful remedy, than to allow him to meet a certain and miserable death. Besides the obstructions I have mentioned, instances sometimes occur of the gullet being so completely stopped by constrictions and tumors, that all communication between the mouth and stomach is cut off. These are generally irremediable.

As the gullet is supposed to incline rather to the left side of the neck, this consideraton would render the left side of the windpipe more proper for the operation. The method of performing it is this:

The patient being secured, as before, and his head drawn back and kept firm by an assistant, an incision should be made with the scalpel, at least two inches in length, directly through the skin and cellular substance, keeping close to the side of the windpipe, and

commencing about half an inch above the seat of the obstructing substance, when this can be done; and when this is impracticable by the obstruction being within the cavity of the chest; the incision should commence about an inch and a half above the breast bone.

The cellular substance being freely divided, the breast and shield, and breast and tongue muscles, together with a portion of the shield gland, will be brought into view: with a flat blunt hook, one assistant should pull the muscles gently to the left side, while another does the same on the right, so as to admit of the gullet being brought to view. If any large blood-vessel is thus unavoidably divided, it should now be secured; and this being done, the operator is to proceed to open the gullet. When the piece of bone, or substance, fixed in the passage, is discovered by the finger, the perforation should be made directly upon it, and the cut, which should always be lengthwise, being made of a sufficient size for extracting it, this should be immediately done with small forceps. But when the cause of obstruction is found to lie within the cavity of the chest, which must add greatly to the hazard of the operation, the gullet ought in this case to be opened immediately above its entrance into the chest; care being taken, in order to give sufficient room for what is to follow, that the opening in the gullet be extended upwards to the full height of the external incision. This being done, a large firm probe should be introduced, in order to determine the seat of the obstruction, when, by means of long small forceps, the substance producing the mischief should be cautiously laid hold of, and slowly extracted.

The operation being in this manner finished, all our attention is to be given to the treatment of the sore and the nourishment of the patient. When the operation is performed for some disease in the upper part of the gullet, till this is either removed by medicines or an operation, the incision must be kept open, for the conveyance of nourishment to the stomach. But when the obstruction is a foreign body, and we have removed this in the operation, nothing should be omitted that can tend to promote an immediate reunion of the divided parts. If, in such circumstances, the patient is allowed either to eat or drink much, the opening in the gullet will be found difficult to heal, and may become fistulous. It will therefore be more prudent to recommend total abstinence from solid food for several days, and to convey nourishment, in the form of strong soups, by the anus, and allowing very small quantities of milk or soup to be swallowed from time to time; by preventing the patient from moving his neck, and treating the wound in the common way, a cure may at last be obtained.

A FEW BRIEF REMARKS ON ANEURISMS.

A true aneurism is a tumor formed by the dilatation of an artery. Tumors proceeding from blood effused from an artery into the contiguous parts, are called false aneurisms.

In the true aneurism, the swelling is at first small and circumscribed, pulsating and yielding to the pressure, while the skin retains its natural color. If the disease is not soon arrested, the swelling increases, though without pain. At last, however, when it becomes

large, the skin loses its ordinary color, becomes pale, and the blood in the tumor coagulating, it becomes firm to the touch. The swelling continuing to increase, at last becomes painful; the skin turns livid, verging on mortification; an oozing of bloody serum issues from the teguments; and if gangrene does not take place, the skin cracks in different parts; and now the force of the artery not meeting with much resistance, if the vessel is large, a period is soon put to the patient's existence, by the blood bursting out with such violence as to produce almost instantaneous death.

In the larger arteries of the trunk, this is the common event of aneurisms. In the extremitites, however, they are more under command, and their effects not so fatal.

In the early stages of true aneurism, a bandage of soft and somewhat elastic materials, properly filled to the part, will often prevent the increase of the tumor; and in some instances complete cures have been made. But in the false aneurism, where the blood is extravasated into the parts, pressure should never be advised, as mortification might ensue.

When the disease has become formidable, and other means fail, an operation of tying the artery becomes necessary which is done in this manner:

The patient being properly placed and secured, and the tourniquet applied above, an incision is to be made with a scalpel along the whole course of the tumor, through the cellular substance. The surgeon should now proceed in a slow and cautious manner, dissecting away one layer of membrane after another, till the artery itself is laid bare. This being done, a lancet should be pushed into the sac, so as to make a hole large enough to admit the finger; when a probe pointed knife should be introduced on the finger, and the sac opened the whole length. The coagulated blood must now be taken out, together with all the other filaments, and the cavity dried with a sponge, when the tourniquet should be made perfectly slack, in order to discover not only the artery, but the opening into it from whence the blood in the tumor has all along issued. This being done, we are next to employ means for preventing any farther effusion of blood into the sac.

The orifice of the artery being brought into view, a probe should be passed into it, to raise the artery from the contiguous parts, so that the surgeon may be enabled with certainty to pass a ligature around it without including the nerves, which in general run near the large blood-vessels of the limb. A firm waxed ligature, must now be passed round it, about the eighth part of an inch above the orifice, and another at the same distance below. The easiest method of introducing the ligatures, is by means of a blunt curved needle. The ligatures both being passed, the upper one is now to be tied sufficiently firm for compressing the sides of the artery; not so tight, however, as to incur the risk of dividing it.

Before the lower knot is tied, the tourniquet should be untwisted, in order to see whether any blood is discharged by the wound in the artery or not. If blood flows freely, it will afford a pleasant prospect of the success of the operation, as it will show that the communicating mouths of the branch arteries are sufficient for car-

rying on the circulation in the under part of the limb. But even though this is not the case, we are not to despair.

The lower knot should now be tied, and the ends of both ligatures should be cut of such a length, that their ends, lying over the wound, may be withdrawn when required. The tourniquet should now be made loose; and if no blood is discharged at the orifice in the artery, we may conclude that the operation is properly performed.

The wound should now be closed up and dressed in the usual manner, the whole secured by a roller.

Immediately after the operation, the want of feeling in the parts below the ligatures is commonly great; but in proportion as the circulation takes place in the under part of the limb, the feeling returns.

This is the most favorable termination. In some instances, however, it is otherwise; instead of a return of circulation, and of the feeling and use of the parts, they remain cold and insensible, and no marks of returning life are perceived. From a mere want of blood, therefore, mortification at last takes place; which for the most part terminates fatally. To avert this, the only resource appears to be amputation.

OF OPENING DEAD BODIES.

With a view to discover the seat and causes of diseases, and at the instance of the civil magistrate, in cases of violent death, surgeons are employed to open dead bodies. When the disease has been evidently seated in one cavity, we do not open the others; but when they are all to be examined, it is proper to begin with the head.

The body being placed upon a table of convenient height, an incision should be made from ear to ear across the side bones. The scalp is now to be dissected off; and one half being turned backward, and the other over the face, a common amputating saw is used for dividing the skull; the division may be begun on the forehead bone, immediately above the front canals, and should afterwards be continued backwards through the side and hinder bones.

The upper part of the skull is now to be raised with a lever; by which the outer membrane may be freely examined; and if we wish to go to the depth of the ventricles only, this may be done without removing the brain. But when our object is to examine the state of the brain and hinder brain, they must both be removed and examined at leisure. This being done, and all the extravasated blood taken off with a sponge, the brain and hinder brain must be replaced with the cap above them. The two portions of scalp are now to be drawn over the whole and secured in their situation, by sewing the edges of the cut together.

The cavities of the chest and abdomen are most effectually exposed in the following manner: let an incision be made through the common teguments from the top of the breast bone to the navel, and let it be continued on each side through the abdominal muscles, from the navel in an oblique direction down to the top of the haunch bone. The teguments and muscles being now dissected from the chest, till all the cartilages which connect the breast bone and ribs

are freely laid bare; and being drawn backward, the cartilages must be divided with a strong knife as near as possible to the ribs; when the diaphragm being separated beneath, the under part of the breast bone and cartilages connected with it being raised and turned upward, the breast bone must be either separated from the collar bones, or cut across near the upper end of it. In this manner the contents of the chest and abdomen are brought to view, when most of them may be examined without being removed; but when more accuracy is required than this admits of, the whole may be taken out: or, when a partial examination is only required, that portion of them only may be removed which we mean to inspect.

To prevent the inconvenience resulting from the infusion of blood and excrement, two strong ligatures should be passed at the distance of an inch from each other at the lower end of the small intestines and large contiguous blood vessels, and round the windpipe, gullet, and large blood vessels of the neck. The parts between the two ligatures may now be cut, above and below, and the whole viscera of both the cavities may then be easily removed. The necessary examination being finished, the effused blood all washed off with a sponge, and the viscera replaced, the teguments must be drawn over them and stitched together with as much neatness as possible.

In opening bodies that have died of any disease, the operator should be as cautious as possible in avoiding cuts or scratches of his fingers and hands: as they are dangerous, and sometimes produce death in its most hideous form.

ART OF HEALING.

KNOWLEDGE AND CURE OF DISEASES.

The knowledge and cure of diseases, do not depend so much upon scientific principles, as is professed in the prevailing dogmas of the present day. It is chiefly the result of observation of the operations of *Nature*, and of experience. We would not be understood, however, as insinuating that a medical education is of no use: a correct knowledge of the human system, in all its parts and functions, and a thorough acquaintance with the symptoms of all diseases and disorders to which it is liable, are attainments indispensable to a good physician. But these can be acquired *correctly* only by blending the study with actual observation, as the student progresses. As well might a man learn the art of *printing*, or any other mechanical business, by *theory* alone, and be as practically competent to the manual labor, as the upstart of mere book knowledge is to the management of the sick. By attending at a sick bed, and carefully observing the various occurrences in diseases, a great degree of accuracy may be acquired, both in distinguishing their symptoms, and in the application of medicine. This is the only way in which a sound medical knowledge can be obtained. All the books ever written upon medical subjects, cannot supply the place of actual experience. Hence, sensible nurses and others who wait upon the sick, often foresee the patient's fate sooner than many who have been bred to physic; and frequently perform cures, where the man of theory has failed.

Definition of diseases, &c.—Every disease may be considered as an assemblage of symptoms, and must be distinguished by those which are most obvious and permanent. Instead, therefore, of giving a classical arrangement of diseases, according to the systematic method, it will be more suitable to our purpose to give a full and accurate description of each particular disease as it occurs; and where any of the symptoms of one disease have a near resemblance to those of another, to take notice of that circumstance, and at the same time point out the peculiar or characteristic symptoms by which they

may be distinguished. By a due attention to these, the investigation of diseases will be found to be a far less difficult matter than most would at first be ready to imagine.

A proper attention to the patient's age, sex, temper of mind, constitution, and manner of life, will likewise greatly assist, both in the investigation and treatment of diseases.

In childhood, the fibres are lax and soft, the nerves extremely irritable, and the fluids thin; whereas, in old age, the fibres are rigid, the nerves become almost insensible, and many of the vessels imperviable. These and other peculiarities render the diseases of the young and aged very different, and of course they must require a different method of treatment.

Females are liable to many diseases which do not afflict the other sex; besides, the nervous system being more irritable in them than in men, their diseases require to be treated with more caution. They are less able to bear large evacuations, and all stimulating medicines ought to be administered to them with a sparing hand.

The temper and mind ought to be carefully attended to in diseases.—Fear, anxiety, and a fretful temper, both occasion and aggravate diseases. In vain do we apply medicines to the body to remove maladies which proceed from the mind. When that is affected, the best medicine is to soothe the passions, to divert the mind from anxious thought, and to keep the patient as easy and cheerful as possible.

Particular constitutions not only dispose persons to peculiar diseases, but render it necessary to treat these diseases in a peculiar manner.—A delicate person, for example, with weak nerves, who lives mostly within doors, must not be treated under any disease, precisely in the same manner as one who is hardy and robust, and who is much exposed to the open air.

Attention ought likewise to be paid to the climate, or where the patient lives, the air he breathes, his diet, &c.—Such as live in low marshy situations, are subject to many diseases which are unknown to the inhabitants of high countries. Those who breathe the impure air of cities have many maladies to which the more happy rustics are entire strangers. Persons who feed grossly, and indulge in strong liquors, are liable to diseases which do not affect the temperate and abstemious, &c.

The different occupations and situations in life dispose men to peculiar diseases.—It is therefore necessary to inquire into the patient's occupation, manner of life, &c. This will not only assist us in finding out the disease, but likewise will direct us in the treatment of it. It would be very imprudent to treat the laborious and sedentary in the same manner, even supposing them to labor under the same disease.

It will likewise be proper to inquire whether the disease be constitutional or accidental; whether it has been of long or short duration; whether it proceeds from any great and sudden alteration in the diet, manner of life, &c. The state of the patient's body, and of the other evacuations, ought also to be inquired into; and likewise, whether he can with ease perform all the vital and animal functions, as breathing, digestion, &c.

Lastly, It will be proper to inquire to what diseases the patient has formerly been liable—whether he has taken large quantities of mercury, quinine, &c., or suffered large evacuations of blood; if he has a strong aversion to any particular drug, &c.

As many of the indications of cure may be answered by diet alone, it is always the first thing to be attended to. Those who know no better, imagine that every thing which goes by the name of a medicine, possesses some wonderful power or secret charm, and think if the patient swallows enough of drugs, that he must do well. This mistake has many ill consequences; it makes people trust to drugs, and neglect their own endeavors. Medicines are useful in their places, as mere handmaids of Nature; and when administered with prudence, may do much good; but when they are put in place of every thing else, or administered at random, they must do mischief.

Every disease weakens the digestive powers.—The diet ought, therefore, in all diseases, to be easy of digestion. In inflammatory cases, as fevers, pleurisies, &c., the food should be light, and the drink diluent and mucilaginous, the quantity to be regulated by the patient's inclination. This regulation of diet is of equal consequence with the administration of medicine. After an inflammatory fever has passed its crisis, and a craving appetite commences, it may be indulged in more nourishing food, and in larger quantities, always bearing in mind, to take a little at a time and oftener.

In fevers of a slow, nervous kind, or agues, or in cases of extreme debility and wasting away of the flesh, where there are no symptoms of inflammation, nourishing diet, and cordial, stimulating drinks are indispensable to a cure. Nor is a proper attention to diet of less importance in chronic than in acute diseases. Persons afflicted with low spirits, wind, weak nerves, thin watery fluids, and hypochondriacal affections, generally find more benefit from the use of solid food, chalybeate waters, and generous liquors, than from all the carminative or other medicines that can be administered to them.

In consumptions, when the humors are vitiated, and the stomach so much weakened, as to be unable to digest the solid fibres of animals, or even to assimulate the juices of vegetables, a diet consisting chiefly of *milk*, especially that of a woman's breast, will not only support the patient, but will often cure the disease, when every other medicine has failed.

Nor is the attention to other things of less importance. The strange infatuation which induces some people to shut up the sick from all communication with the external air, has done great mischief. Not only in fevers, but in many other diseases, the patient will receive more benefit from having the fresh air prudently admitted into the chamber, than from all the medicines which can be given him.

Exercise may likewise be considered as a medicine, in many cases.—Sailing, or riding on horseback, for example, will be of more service in the cure of consumptions, glandular obstructions, &c., than any medicines yet known. In diseases which proceed from a relaxed state of the solids, the cold bath, and other parts of the gymnastic regimen, will be found equally beneficial.

Few things are of greater importance in the cure of disease

than cleanliness.—When a patient is suffered to lie in dirty clothes, whatever perspires from the body is again re-absorbed, or taken up into it, which serves to nourish the disease, and increase the danger. Many diseases may be cured by cleanliness alone; most of them may be mitigated by it, and in all of them it is highly necessary, both for the patient and those who attend him.

Many other general observations might be made, were it necessary; but I will conclude with the single remark, that a competent physician, who assumes the responsibility of the lives of men, should be possessed of a sound, discriminating judgment, firmness of nerve and purpose, independence, and above all, *patience;* to which should be added an intimate acquaintance with the action of the human system, the situation of the parts, their functions, their morbid and healthy appearances—regulated and governed as the whole is by that principle in Nature, which is continually exerted to the preservation of the human frame, and without which, it could not exist an instant. The whole duty, therefore, of a physician, is, to follow the indications of Nature, and aid her efforts to throw off disease, whether by perspiration, eruptions, expectoration, diarrhoea, or increased urinary discharge, or otherwise.

I cannot forbear one more remark: I have never yet been able to discover the necessity of connecting the study of the dead languages with that of physic. Is not the English language sufficiently comprehensive to explain every term connected with the science? Why then should a student throw away years of his life in the acquisition of a language quite useless, and charge his memory with a host of uncouth medical terms, to the exclusion, perhaps, of what is really valuable? It can only confuse and confound that which, rightly understood, is simple:—or what is more dangerous, serve as a cloak for ignorance, when the common language and common sense of the people, would detect and expose them.

GENERAL VIEW OF FEVERS.

A FEVER exists when the motion of blood is preternaturally accelerated, which increased motion seems to be caused by an effort of Nature to expel something out of the body, which ought not to be retained within it; but this effort becomes a primary disease, from the incapacity of Nature to remove it.

By *Nature*, is meant that active power by which those functions are performed, which are entirely independent of our own direction or consent; such, for instance, as the pulsation of the heart and arteries, the secretions, &c.

The immediate cause of fevers, is *irritation*, (which may occasion a spasmodic affection of the whole nervous system,) commonly owing

to an obstruction of insensible perspiration; when the particles of this matter are thrown back into the circulation, they may stagnate in, and plug up the extremities of the fine hair arteries near the surface, or bring on spasmodic constrictions of them. An irritation may also be owing to other causes, as acrid food or liquors, affections of the mind, hunger, the absorption of pus, any thing acrimonious coming in contact with the extremity of a nerve, intense study, great watchfulness, profuse venery, &c.

THE SYMPTOMS of an inflammatory fever, are: parching heat, intolerable thirst, high colored urine, without sediment; quickness, hardness, and fulness of pulse, pain in the head, back, and loins; a dry furred tongue, anxiety about the heart and chest, difficult respiration, drowsiness and aversion to food.

Fevers generally begin with a previous sensation of chilliness, shivering, or intense cold; less or more, longer or shorter, external or internal, according to the variety of subjects, causes, or fevers themselves. When the fever comes on gradually, the patient generally complains of languor, or listlessness, soreness of the flesh or bones, and heaviness of the head. When it attacks suddenly, it always begins with an uneasy sensation of excessive cold, accompanied with debility and loss of appetite.

THE PROGNOSTICS.—Every fever ends in *health, another disease,* or *death.*

In *health*, when the matter causing the disease, is subdued by the fever, loosened, rendered moveable, and at length expelled by insensible perspiration, sweat, saliva, vomiting, urine, or diarrhoea; a crisis usually coming on within fourteen days, in any event.

In *another disease*, when the vessels are injured by too violent an agitation, or too much powerful medicine; the more fluid parts consumed, the rest too much thickened, and the critical matter deposited in vessels which are obstructed, dilated, or ruptured; hence arises fever-sores, pustules, red spots, erysipelas, biles, buboes, schirrous tumors, abscesses, gangrene and mortifications.

In *death*, when the preternatural increase of the vital heat overcomes the elasticity of the muscular fibres, and stops the action of the heart; or, when the fluids are destroyed by the force of the solids. Hence arise inflammations, suppurations, gangrene in the vital parts, and ulcers in the first passages.

THE CURATIVE INDICATIONS.—These direct to the correction and expulsion of the acrid, irritating matter, with unremitted attention to the *living principle*, that it may not be too much diminished; while all the emunctories and passages of the body should be kept free and open, the motion of the blood restrained within due bounds, and the redundance of heat expelled. As to *regimen*, fresh air is absolutely necessary, which may be admitted by the door or windows, as often and as long as may be thought convenient; it not only removes his anxiety, but cools the blood, revives the spirits, and proves every way beneficial. Many patients are stifled to death for the want of fresh air. Vinegar should be thrown frequently on a red hot iron in the room;

sliced onions may be placed about the room, in malignant fevers; nor would it be a trifling, melioration of the air, to set pots near the bed with some of the aromatic plants growing in them, as mint, rue, rosemary, &c. Clean dry linen refreshes, and may be safely allowed every day, or every other day at farthest. Let him not be confined wholly to his bed, but sit up every day, as long as he can without fatigue. Few visiters should be allowed, as nothing spoils the air of a sick person's chamber, or hurts the patient more, than a number of people breathing in it. He should be plied plentifully with diluting liquids, for it is impossible that he can drink too much; what the fluid is, is not very material, provided it be taken in immense quantities; even cold water, if required, may be drank with safety and advantage. The following diluents are very suitable: teas prepared from the spice bush bark, or balm, sage, mint, pennyroyal, catnip; cider-whey, boiled buttermilk, barley-water, &c.

When Nature verges towards a secretion, sweating, or at least a warmer regimen becomes necessary to help on a crisis; depuration is the work of Nature; if she is languid, assist her with cardiacs, aromatics and cordials. Then blisters and poultices are highly proper to quicken the circulation, dissolve the too viscid particles of blood, and forward the secretion.

When the fever is subdued, let the patient take that which affords the least employment for the milk vessels; whatever food is allowed should be given in small quantities, and oft repeated; spoon meats, broth, panada, bread pudding, and such like. It is a fortunate circumstance that persons, while a fever continues, seldom feel any inclination to eat; for the chyle, or milk, cannot then be properly elaborated. After the ravages of a fever, and to remove the distressing languor which arises from too profuse evacuations, nothing is so proper as strong broths, drank as frequently and as plentifully as the stomach can bear. If a vehement craving is manifested for *something particular* to eat, and it be often repeated—let it be what it will, it ought not be refused; in the decline of fevers, there seems to be something in these untoward hankerings of Nature similar to that depravation of appetite in the green sickness, where the eager desire of chalk and tobacco pipes is by no means, as some suppose, the cause of their disorder, but the predominant acid in their stomach (the primary disorder) which naturally instigates them to feed on such things.

THE CURE.—Never bleed in a fever of any description, unless inflammation and congestion of blood upon the brain are threatened. It is against the plainest dictates of common sense. The Yankee housewife, when she finds the brine of her pork-barrel becoming *rusty*, does not draw off one gallon, and pronounce the remaining nine pure and sweet! No—she would think such a proposition came from a fool. Her common sense, however, teaches her to place that brine over a fire, and by the action of a gentle heat, cause the impurities to separate and rise on the surface, when she readily scums them off, leaving the brine purified, and again fit for use.—Just so with the animal blood: drawing off the tenth, eighth, or even the fourth part of a man's blood, I presume does not change the quality of what is left! It is only a foolish waste of the *capital* of

life. With the blood, as with the brine, a gentle heat is required, to separate the noxious impurities; and in the former, that heat is had in the fever.

☞ If the cause of the fever is a foul stomach, (which is frequently the case,) first let that be emptied with a vomit or purge, or both; indeed, these can rarely come amiss. After this give the *fever powders*, hereafter mentioned, or something similar, with warm teas. These fever powders operate so beautifully, that I cannot forbear recommending them strongly; they produce immediate ease, and relaxation of the whole system—opening the pores, and bringing a fine moisture on the surface—giving astonishing relief. Almost any fever may be soon extinguished by a proper use of these powders.

INTERMITTENT FEVERS, OR AGUES.

An intermitting fever, is one that returns after the patient is wholly free from it, for one, two, or more days, with fresh severity.

Causes.—A viscidity, coldness, (from want of oxygen,) and feebleness of the arterial blood, occasioning a quicker and stronger contraction of the heart; an obstruction, or unequal distribution of the vital heat; a predominant acid and cold *phlegm in the first passages*; universal debility. These may be produced by whatever relaxes the solids, diminishes the perspiration, or obstructs the circulation in the small vessels.

Symptoms.—The paroxysm of an intermittent, consists of three successive stages, viz: a hot, a cold, and a sweating stage. The fit commences with a sluggishness, sensation of lassitude, cold shivering, quaking, paleness of the extremities, difficult respiration, anxiety about the heart, nausea, vomiting, pain in the back loins, and limbs, the pulse quick and small, the urine thin and crude. Then follow heat, flushings, redness, strong pulse, intense thirst, violent pain in the head, and the urine red, as in a continual fever; afterwards the patient falls into a profuse sweat; the symptoms remit; the urine grows thick, with a sediment like brick dust; sleep and feebleness succeed.

Prognostics.—Sometimes it changes its marks, and is converted into a dangerous continual fever; but this is peculiar to full habits. Sometimes it ends, if not treated properly, in a dropsy, jaundice, consumption, or schirrous tumors of the abdomen: though these disorders may with more propriety be imputed to *bleeding*, and the continual use of *quinine*, adulterated as it frequently is with *arsenic*, than to be numbered among the natural consequences of ague. If properly managed, it may be subdued with great ease.

The cure.—I. This consists, during the cold stage, in endeavoring to bring on the hot, by means of artificial warmth; putting the feet in warm water; giving warm diluent liquids, stimulating diaphoretics, cordials, &c.

2. During the hot stage, to promote a free perspiration by means of the *fever powders*, Indian turnip, diaphoretic teas, cordials, &c.

The first thing to be done in the cure of an intermitting fever, is to cleanse the stomach and bowels. This not only renders the application of other medicines more safe, but likewise more efficacious. In this disease the stomach is generally loaded with cold, tough, viscid phlegm, and frequently great quantities of bile are discharged by vomit; which plainly points out the necessity of such evacuations. Emetics are, therefore, to be administered, before the patient takes any other medicine, which may be administered just before the accession of the cold fit. The emetic weed, or seeds, I prefer, as it seems to break up the foundation of the disease very effectually: Ipecac, is also very good. After the vomit begins to operate, the patient ought to drink plentifully of weak camomile, or pennyroyal tea. These vomits may be repeated, if necessary, in two or three days. Emetics not only cleanse the stomach and bowels, relax constriction on the surface, increase perspiration and all the other secretions, which render them of such importance, that they often cure intermitting fevers without the assistance of any other medicine.

Purgative medicines are likewise useful, and often necessary in intermitting fevers. Emetics, however, are more suitable in the disease, and render purging less necessary, especially where there is much debility. But if the patient is afraid to take a vomit, he must use purges; and the mandrake is a very proper one, as are also blue flag, and rhubarb.

After thus laying the foundation of a cure, the patient, particularly if much debilitated, should take plentifully of warming and strengthening *tonics*, and *bitters*, and preparations of oxide of iron, &c., such as the *tonic tincture*, and myrrh and iron pills; *bitters*, such as golden seal, gentian, columbo, calamus, orange peel, pleurisy root, angelica, the jelly, Peruvian bark, white wood bark, unicorn root, &c., and such preparations as may be found in this work. I consider one great cause of the ague to be a cold and watery state of the blood, rendering it too feeble to perform its round of circulation; and the above tonics, by warming it, and giving weight and strength to it, remove the cause, and at the same time the disease.

If the patient complains of acidity in his stomach, alkalies, as sal æratus and rhubarb, may be administered, as required.

When agues are not properly cured, they often degenerate into obstinate chronical diseases, as the dropsy, jaundice, &c. For this reason all possible care should be taken to have them *radically* cured, before the constitution has been too much weakened; and this is not done by the common practice of "breaking," or "killing the fit," as it is called, with barks and quinine; for this is no removal of the cause; and only operates to thwart and check the efforts of Nature, keeping her feeble and prostrate.

If the patient has clammy night sweats, they should be remedied, as they are very weakening: ten or fifteen drops of elixir vitriol, may be taken three or four times a day; or a decoction of the herb called five-finger leaf; which are very bracing to the relaxed solids. Fric-

tion, with a woollen cloth, over the whole body, helps greatly in all cases of night sweats.

REMITTENT FEVER.

This fever takes its name from a remission of the symptoms, which happens sooner or later, and generally before the eighth day. The remission is commonly preceded by a gentle sweat, after which the patient feels greatly relieved, but in a few hours the fever returns.—These remissions return at very irregular periods; the nearer, however, that the fever approaches to a regular intermittent, the less is the danger. This species of fever may be considered as the next in grade of severity above the intermitting fever.

Causes.—Remitting fevers prevail in low marshy countries, abounding with wood and stagnating water; but they prove most fatal in places where great heat and moisture are combined, as in some parts of the southern and western states.

Symptoms.—The first symptoms of this fever are generally, yawning, stretching, pain, languor, and giddiness in the head, with alternate fits of heat and cold. Sometimes the patient is affected with a delirium on the very first attack. There is a pain and sometimes a swelling about the region of the stomach, the tongue is white, the skin and eyes frequently appear yellow, and the patient is often afflicted with bilious vomitings. The pulse is sometimes a little hard, but seldom full; and the blood, when let, rarely shows any signs of inflammation. Some patients are exceedingly costive, and others are afflicted with a very troblesome looseness.

It is impossible to describe all the symptoms of this disease, as they vary according to the situation, the season of the year, and the constitution of the patient. Sometimes the bilious symptoms predominate, sometimes the nervous, and at other times the putrid. Nor is it uncommon to find a succession of each of these, or a complication of all of them in the same person.

Diet.—When there are symptoms of inflammation, the diet should be slender and the drink weak and diluting. But when nervous or putrid symptoms prevail, it will be necessary to support the patient with food and liquors of a more generous nature. We should be cautious, however, in the use of things of a heating quality, as this fever is frequently changed into a *continual*, by a hot regimen and improper medicines.

Whatever the symptoms are, the patient ought to be kept cool, quiet, and clean. His apartment large and well ventilated, by letting in air at the doors and windows; it ought likewise to be sprinkled with vinegar, juice of lemon and the like, and sliced onions may be placed about the room. His linen, bed clothes, &c. should be frequently, changed, and all his excrements immediately removed. These things are of great importance and must not be neglected.

Medical Treatment.—Here again the emetics, as recommend-

ed in the ague, are of eminent service in breaking up the foundation of the fever; and these may be repeated once or twice, at proper intervals, if the sickness or nausea continues. Purges may also be necessary. Then, after the fever begins to come on, the *fever powders* will give ease, and produce an agreeable relaxation of the whole nervous system, thereby opening the pores and creating moisture on the surface. For this purpose, these fever powders exceed every thing I ever beheld; and are invaluable in all kinds of fever. The bowels, in all kinds of fever, should be kept open and free.

Affusion in cold water, where it can be practised with propriety, produces the most agreeable effects, with a tendency to sleep, fuller and more uniform pulse, moist skin, and now and then a distinct remission —To allay vomiting, sal æratus with rhubarb may be used; and warm fomentations of camomile, and poppies, applied near the seat of the stomach.

The body ought to be kept open either by clysters or gentle laxatives, as weak infusions of senna, manna, roasted apples, tamarinds, &c.; but all strong or drastic purgatives are to be carefully avoided.

In this fever, as well as in that called the yellow fever, the mandrake may be regarded as an invaluable remedy where it is wished to carry off putrid feculent matter from the bowels, and there is, at the same time, any degree of nausea or vomiting present, for it will pretty generally take effect downwards, although it may have caused vomiting at first.

When the blood is thrown on the brain with too great force, so as to cause inflammation, pain, or delirium, my *anodyne wash*, freely applied to the head, is very cooling, and gives great relief. It is very effectual in allaying inflammation, and prevents the determination to the brain. Poultices of bruised onions, or garlics, or other warm drawing applications to the soles of the feet and palms of the hand, give great relief to the head, equalize the circulation, and extract the fever. Potatoes, roasted, so as to be mashed, and applied as hot as can be borne to the feet and glands throughout the body, are of great benefit in severe cases.

The use of cordial medicines is not to be dispensed with; for if Nature is not kindly supported, she cannot free herself from such disorders; add to which, the languor arising from necessary evacuation is sometimes fatal for want of proper strengtheners, and nutritious restoratives.

A remittent fever is always attended with some hazard, particularly in warm climates; in which it usually goes through its course in five or six days; but in cold ones, its crisis is not usually effected until the twelfth or fourteenth. The shorter and more obscure the remissions, the greater the danger, and each succeeding paroxysm is attended with more risk than the former one. On the contrary, the milder the attack, and the nearer the fever approaches to the intermittent form, the sooner will be the prospect of the patient's recovery.

When the fever abates, give tonics, and bitters, as in other cases of debility.

SIMPLE CONTINUED FEVERS.

The necessity of any fever acquiring this title, has always appeared doubtful to me. From the experience I have had in them, I conclude that they are "simple continued fevers," only from *sufferance*. However, as they have acquired a name among diseases, I will describe them.

Fevers of this type continue for several days, with nearly the same degree of violence, having evident exacerbations and remissions daily.—They are composed of a combination of inflammatory and typhoid or putrid symptoms; the former being apt to preponderate at the commencement, the latter towards the termination of the disease. It is contagious, and of frequent occurrence in this country.

Remote causes.—Every thing having a tendency to enervate the body; as bodily fatigue, great indulgence in sensual pleasures, violent exertions, intemperance in drinking, and now and then from suppression of long accustomed evacuations; with all the causes enumerated under the general observations on fevers. The days on which it is supposed the termination of continued fevers usually happens, are the third, fifth, seventh, ninth, eleventh, fourteenth, seventeenth, and twentieth.

Symptoms.—An attack of this fever generally begins with languor, or a sense of debility, sluggishness, aversion to motion, yawning and stretching; the face at the same time becoming pale, and the skin over the whole body constricted; subsequently a sensation of cold in the back, passing thence over the whole frame; and these continuing to increase, tremors in the limbs, and cold shiverings succeed. With these, there is a loss of appetite, want of taste in the mouth, pains in the head, back, and loins, and a small and frequent respiration. The sense of cold after a little time becomes less violent, alternated with flushes; and at length going off altogether, it is succeeded by great heat, diffused over the whole body; the face appears flushed, the skin and tongue dry; universal restlessness prevails, with violent pain of the head, oppression of the chest, sickness at the stomach, with inclination to vomit. There is likewise great thirst and costiveness, and the pulse is full and frequent, producing from 90 to 120 pulsations a minute. When these symptoms run high, and there is considerable determination of blood to the brain, delirium will ensue. There is generally in all continued fevers an increase of symptoms towards evening.

Unfavorable symptoms.—If the disease is likely to prove fatal, either in consequence of its long continuance, or the severity of the symptoms, there will be observed a starting of the tendons, the patient picking the bed clothes; involuntary discharges by urine and stool; coldness of the extremities, and hiccups; but where no such appearances occur, the fever will run its course, and ultimately cease.

FAVORABLE SYMPTOMS.—The pulse becoming soft, and approaching its natural state: the tongue losing its furred appearance; thirst abating, the skin covered with a gentle and equable moisture, and feeling soft to the touch; the secretory organs performing their several functions, and the urine depositing flaky crystals of a dirty red color and becoming turbid on being allowed to stand.

MEDICAL TREATMENT.—In fever, all bodily motion should be avoided, especially that which calls any of the muscular powers into motion; very frequently merely getting into bed, and keeping perfectly quiet, both in body and mind, will prevent a severe fever; the patient ought, therefore, to be confined to bed, and lay in the easiest posture. Emetics and purgatives, and the subsequent use of *fever powders*, &c. as recommended in inflammatory fevers, are equally applicable in continued fevers; and if properly administered in the commencement, will usually break up the fever entirely. The treatment, in short, will be nearly the same as in the inflammatory at the commencement; and if the fever should not end here, the utmost caution must be observed in the use of those means which have a manifest tendency to reduce the tone of the system, so that sufficient strength may be left to combat the succeeding stage, which is invariably one of great debility, and in which the treatment will be that proper for typhus or putrid fever.

DIET.—In this fever, particularly at the commencement, the cooling regimen will be strictly necessary, as well as in some others of continued fevers. That kind of aliment which gives the least stimulus will be the most proper; it should consist of the most light, nutritive, and easily digested substances, as panada, roasted apples, preparations of barley, oatmeal, &c. Animal broths increase the heat of the body, and consequently are improper, unless the patient be in a state of convalescence The drink may be, boiled buttermilk, barley water, and toast-water, milk whey, lemonade, thin gruel, &c.

INFLAMMATORY OR ARDENT FEVER.

An *ardent fever* is attended with a preternatural and universal heat. A strong, frequent, and hard pulse, and the animal functions but little disturbed, although at an advanced stage of it, the brain is apt to become much affected. It most commonly attacks the young, or persons about the prime and vigor of life, especially such as live high, and abound in blood. It is most prevalent in spring and autumn.

CAUSES—Sudden transitions from heat to cold; any thing that overheats the body, as sleeping in the sun, drinking strong liquors, eating spiceries, &c. It is also occasioned by whatever obstructs perspiration, as lying on the damp ground, severe colds, drinking cold liquors when the body is hot, intense thinking, night watching, repelled eruptions, suppressed evacuations, &c. These cause an i-

tation: and if that which ought to be expelled from the body is retained within it, a consequential putrefaction ensues, from whence the putrid inflammatory and other putrid diseases.

Symptoms.— A rigor or chilliness generally ushers in this fever, which is soon succeeded by great heat, frequent and full pulse, pain in the head, back and loins, dry skin, redness of the eyes, florid countenance, &c.; to these succeed difficulty of breathing, sickness, with an inclination to vomit. The patient complains of great thirst, has no appetite for solid food, is restless, and his tongue furred with white in the centre.

Unfavorable Symptoms.—Delirium, excessive restlessness, great oppression of the breast, laborious respiration, starting of the tendons hiccup, cold clammy sweats, and an involuntary discharge of urine, &c. These all forebode danger; but if the patient snatches, fumbles with his fingers, gathers up the bed clothes, seems to pick straws, drops involuntary tears; if purple or livid spots appear, if the side stomach region is inflated, the extremities cold, with catchings of the breath, insensibility, cold sweats, rattling in the throat: any of these are dangerous symptoms, and most of them generally quick forerunners of death.

Diet.—From the symptoms of this disease it is evident that the blood and other humors require to be attenuated; that the perspiration, urine, saliva, and all the other secretions, are in too small quantity: all the fluids seeming to be consumed by the intense heat. The vessels are rigid, and the heat of the whole body too great: all these clearly point out the necessity of a regimen calculated to dilute the blood, correct the acrimony of the humors, allay the excessive heat, remove the spasmodic stricture of the vessels, and promote the secretions.

These important purposes may be greatly promoted, in addition to medicine, by drinking plentifully of diluting liquors, as *boiled* or *mulled buttermilk*, balm, mint, sage, or pennyroyal teas, water gruel, barley water, whey, apple tea, &c.; these may be sharpened with the juice of orange, currant jelly, and such like: orange whey is an excellent drink. It is made by boiling among milk and water a bitter orange sliced, till the curd separates. A lemon, or a few spoonsful of vinegar will have the same effect. Two or three spoonsful of white wine may be added while boiling.

The above liquids must all be drank a little warm; and taken more freely after the fever has made some progress, in order to assist in carrying off the disease by promoting the different excretions.

The patient's diet must be spare and light, as panada, roasted apples, &c.

Fresh air may frequently, with some caution, be let into his chamber. The patient should not be loaded with bed clothes: it increases the heat of the body, fatigues the patient, and retards perspiration.

Sitting upright in bed, if the patient be able to bear it, will often have a good effect: it relives the head. Sprinkling the chamber with

vinegar, juice of lemon, sliced onions, aromatics &c., greatly refreshes the patient, and should be often repeated, in warm weather especially.

The patient should be kept as quiet as possible. Company, noise, and every thing that disturbs the mind, is hurtful. Even too much light ought to be avoided. His attendants should be as few as possible, and they ought not be too often changed. His inclinations ought rather to be soothed than contradicted.

MEDICAL TREATMENT.—Assist Nature in her efforts to expel the morbific matter, in the same method whereby she attempts to do it, whether by vomiting, sweat, or urine. First, give the emetics before mentioned, if the appearances justify it. If the fever rages high, and there is great constriction and oppression, nothing will subdue it and produce a general relaxation, equal to the *fever powders*, before mentioned. If the blood flows with too great velocity on the brain, causing pain and delirium, bathe the head with some cooling liquid, as my *anodyne wash*, which is of great use; and also, at the same time, apply draughts to the feet, hands, and glands, as of onions, garlics, roasted potatoes, &c.; *spice bush bark* tea is excellent for a constant drink to moderate the fever. If the body be bound, a clyster of milk and water, with a little salt and a spoonful of sweet oil or fresh butter in it ought, to be administered daily. If this should not have the desired effect, a tea-spoonful of magnesia may be frequently put in his drink: he may also eat tamarinds, roasted apples, and the like.

If the pain in the head, and delirium, is obstinate, and accompanied with oppressed breathing, blisters on the back of the neck, and fomentations, should be applied.

If nausea prevail at the commencement of the disease, the stomach may be relieved, by making the patient drink an infusion of camomile flowers: but if these should not have the desired effect, a little alkaline solution may be given.

If about the tenth, eleventh, or twelfth day, the pulse becomes more soft, the tongue moister, and the urine begins to let fall a reddish sediment, there is reason to expect a favorable issue of the disease. But if, instead of these symptoms, the patient's spirits grow languid, his pulse sinks, and his breathing becomes difficult, with a stupor, trembling of the nerves, starting of the tendons, &c., there is reason to fear fatal consequences.

In this case, blistering plasters may be applied to the head, ancles, inside of the thighs; poultices of roasted potatoes, garlics, onions, mustard and vinegar may likewise be applied to the soles of the feet, and glands throughout the body: and what is more effectual in the worst extremity, than all the rest, the fresh killed flesh of any animal, applied while it is yet warm with natural heat, over the pit of the stomach, and to the glands in the groin, armpit, &c., and changed as often as it becomes fœtid. Fowls cut open and applied are generally the most convenient; or the skin stripped off from cats. These applications of flesh extract the fever and putrescence most astonishingly, and stink with corruption in a very short time.

A proper regimen is not only necessary during the fever, but likewise after the patient begins to recover. By neglecting this, many relapse, or fall into other diseases, and continue weakly for life. The functions of the system are weak after a fever, and the diet ought to be rather light for a time, taken often, if craved, and little at a time. Too much food, drink, exercise, company, &c., are carefully to be avoided. The mind ought likewise to be kept easy, and the patient should not attempt to pursue study, or any business that requires intense thinking.

When the patient's health is pretty well restored, he ought to take some gentle laxative, as senna, tamarinds, buttermilk, &c. Tonics, and strengthening medicines may be given on recovery, as directed in intermittents.

SLOW OR NERVOUS FEVER.

Nervous fevers commonly attack persons of a weak, relaxed habit, who neglect exercise, eat little solid food, study hard, and indulge in spiritous liquors.

Causes.—Nervous fevers may be occcasioned by whatever depresses the spirits, or impoverishes the blood: as grief, fear, anxiety, want of sleep, intense thought, living on poor watery diet; a deficiency and unequal distribution of vital heat; consequently a declension of the powers of Nature, viscidity of the fluids, a relaxed state of the arterial system. It is more common in damp, unwholesome air, low, dirty houses, crowded streets, &c., and persons whose constitutions have been broken by excessive venery, frequent salivations, or excessive evacuations, are most liable to this disease.

Keeping on wet clothes, lying on damp ground, excessive fatigue, and whatever obstructs perspiration, or causes a spasmodic stricture of the solids, may likewise occasion nervous fevers; and we may also add, frequent and great irregularities in diet. Too great abstinence, as well as excess, is hurtful. Nothing tends so much to preserve the body in a sound state, as a regular diet.

The most general cause of this fever, is contagion, communicated through the medium of an impure or heated atmosphere, by concentrated effluvia arising from the body of a person laboring under this specific disease. Some predisposition, however, is requisite, in order to enable contagion to generate this fever.

Symptoms.—The slow, or nervous fever, generally sets in with remarkable mildness in its symptoms; and although the patient experiences some trifling indisposition for several days, still he has no reason to suspect the approach of any severe disease. Then follow, dejection of spirits, want of appetite, deep sighing, chills and flushings, weariness, nausea, prostration of strength and spirits, listlessness, heat in the palms of the hands and soles of the feet, (a certain sign of slow digestion,) while all the rest of the body is cold, and emaciates fast; a sensation like cold water thrown down the back; the pulse quick, weak, and unequal; pale urine; stupor; heat and dryness of the tongue, sometimes with, and sometimes without, thirst;

miliary eruptions; cold, clammy, or greasy sweats; convulsions; delirium, and twitching of the nerves.

PROGNOSTICS.—All the symptoms are increased towards night. A tingling noise in the ears is generally the forerunner of a delirium. A copious spitting, or gentle breathing sweats, are good signs; profuse sweats are bad ones. Insensibility, twitching of the tendons, excessive looseness, frequent fainting fits, involuntary evacuations of the excrements, urine, or tears, are preludes to death. But if, towards the ninth, tenth, or twelfth day, the tongue becomes more moist, with plentiful spitting, gentle purging, or moisture upon the skin; or if a suppuration happen, in one or both ears, or large pustules break out about the lips and nose, there is reason to hope for a favorable crisis.

DIET.—It is very necessary, in this disease, to keep the patient cool and quiet. The least motion would fatigue, and occasion weariness and even faintings. His mind ought to be kept easy, and soothed with the hope of recovery—forbidding all frightful and gloomy ideas. The patient must not be kept too low; his strength and spirits ought to be supported by nourishing diet, and generous cordials. For this purpose wine may be mixed with whatever food he takes. In fact, genuine wine, in this disease, is almost the only medicine necessary. Patients in the lowest extremity, have recovered by using a bottle or two of strong wine every day, in whey, gruel or negus. Good old sound claret is the best.

In a word, the great aim in this disease is to support the patient's strength, by giving him frequently small quantities of the above, or other drink of a warm and cordial nature. He is not, however, to be overheated, either with liquor or clothes; and his food ought to be light, and given in small quantities.

THE CURE.—All evacuations are inadmissible, vomits only excepted; sometimes very lenient clysters, such as new milk and sugar, may be safely administered, if Nature inclines to a stool. The medicines necessary, are attenuants, such as open the secretions, and thin the blood, (the *fever powders* in small doses, occasionally;) restoratives, nervines, and cordials.

Cold affusion is one of the most powerful and efficacious means that can be resorted to in low typhus fevers; but its effects are more salutary in proportion as it is adopted early, or during the first stage of the disease. The affusion may be repeated four or five times in the course of twenty-four hours, using spring water impregnated with common salt, when sea water is not at hand; at the same time the patient's feet may be placed in a warm bath. This operation being over, the feet dried, and the patient put to bed, some herb teas may be given him, to promote perspiration. Blistering is also highly necessary; plasters may be applied at all times of the fever, with great advantage. If the patient be delirious, in addition o the *anodyne wash*, he ought to be blistered on the neck or head, and it will be the safest course, when the insensibility continues, as soon as the discharge occasioned by one blistering plaster abates, to

apply another to some other part of the body, and thus keep up a continual succession of them till he is out of danger. Blistering plasters not only stimulate the solids to action, but likewise occasion a continual discharge, which may in some measure supply the want of critical evacuations, which seldom happen in this kind of fever.

A miliary eruption sometimes breaks out about the ninth or tenth day. As eruptions are often critical, great care should be taken not to retard Nature's operation in this particular. The eruption ought not to be checked by any evacuation, nor pushed out by a hot regimen; but the patient should be supported by gentle cordials, as before mentioned.

This fever is in part a disease of the nerves, or a laxity of the nervous influence. Therefore, in desperate cases, nervines and antispasmodics are highly useful. When hiccup and starting of the tendons have already come on, extraordinary effects may sometimes be produced from large doses of musk, camphor, valerian, lady-slipper, saffron, castor, hartshorn, &c., frequently repeated. If the fever should happen to intermit, and the patient's strength is much exhausted with clammy sweats, tonics, and the elixir vitriol may be used. If the sweats are profuse, let warm napkins be frequently applied to the neck, breast, and abdomen: for though gentle sweats are of service, when they become profuse they only tend to the dissolution of the patient in a double sense.

There is no fever that requires to be watched more attentively than this. If the actions of the system are not kept up by stimulating applications, and the patient's strength supported by cordial medicines and nourishing diet, he will sink under the disease; and it frequently happens that when the attendants think him better, he is actually dying.

Mulled or *boiled buttermilk*, either by itself, or with wine in it, is a most excellent medicine in all fevers, and particularly in typhus and epidemics; and it is one too that is easily obtained. In the epidemic that raged through the country in 1813–14, almost all who were attacked in the section of the country in which I lived, died; until the use of this invaluable remedy was discovered, when after that, almost all that used it, were carried through safely. When a man found himself attacked, he immediately placed himself quietly in bed, and drank large quantities of this boiled buttermilk, warm, till a profuse perspiration was brought on; and when that was over, he would get up, in a measure well.

And it is a singular coincidence, and one that gives me pleasure to record, that during the same raging epidemic, in another section of the country, the inestimable FEVER POWDERS, which I have so highly recommended throughout this work, proved an *absolute specific* against its deadly ravages; for it is within my own personal knowledge, that a botanic physician in the state of Massachusetts, who knew the virtues of this blessed root, and used it, out of one hundred and forty-nine patients in that fever, only lost one, and she was old and at the same time afflicted with a complication of other diseases. And while this medicine thus proved a certain saviour to all who took it, nearly all others who were *really* attacked, and went through the common course of bleeding, &c., perished.

I wish to inspire not only patients in this fever, but their physicians also, with unceasing and unabated hope to the very last extremity. The changes for the better are often as sudden and unforeseen, as those for the worse. The last gasp alone should induce us to give over the patient.

PUTRID, MALIGNANT, YELLOW, AND SPOTTED FEVERS.

These may be classed together, because they are each produced by similar causes, and require very little, if any, difference of treatment. To this class also belong the *jail-hospital fever*, and the *pestilence*. These fevers are of a malignant character, and putrefaction takes place towards their close.

Causes.—This fever is occasioned by foul air, putrid animal and vegetable effluvia, or infectious particles. Confined air, crowded with people, and not properly ventilated, is a frequent cause. A close constitution of the air, with long rainy and foggy weather, impedes perspiration, and therefore occasions putrid fevers. Damaged grain, dry hides, dead carcasses, tainting the air, especially in hot seasons, are very apt to occasion putrid diseases. They may also be produced by the contiguity of burying grounds, slaughter houses, &c. The obstruction of insensible perspiration, is no uncommon cause of this class of fevers; for the retention of those particles within the body, which ought to have been thrown out of it, may, and often does, occasion a speedy putrefaction, especially when there is the least predisposition to such a dissolution.

We shall only add, that putrid and malignant fevers are highly infectious, and are therefore to be communicated by contagion. For which reason all persons ought to keep at a distance from those affected with such diseases, unless their attendance is absolutely necessary.

Symptoms.—The malignant fever is generally preceded by languor, a remarkable weakness, or loss of strength, without any apparent cause. This is sometimes so great that the patient can scarcely walk, or even sit upright, without being in danger of fainting away. His mind, too, is greatly dejected; he sighs, and is full of dreadful apprehensions. There is a nausea, and sometimes a vomiting of bile; pain in the temples and orbit of the eye; the eye heavy, yellowish, or inflamed; the face bloated, and of a cadaverous aspect; faintness, difficult respiration, frequent sighing, wandering pains, the pulse small, sometimes quick, and sometimes the same as that of a person in perfect health; black tongue, bitter taste in the mouth, crude vapid urine; livid eruptions, black and blue spots, furred lips and teeth, little thirst, sores in the mouth, tingling in the ears, pains in the loins and small of the back, violent diarrhœas.

If blood be let, (which Heaven forbid,) it appears dissolved, and soon becomes putrid; the stools smell extremely fœtid, and are sometimes of a greenish, black, or reddish cast, sometimes there are violent discharges of blood from the mouth, eyes, nose, &c.

Simple putrid fevers may be distinguished from the inflammatory, by the smallness of the pulse, dejection of the mind, purple spots, dissolved state of the blood, and putrid smell of the excrements. They may likewise be distinguished from nervous, by all the symptoms being more violent.

It sometimes happens that the inflammatory, nervous, and putrid symptoms are blended together. The inflammatory are more prevalent in the yellow fever. In judging, therefore, to which class the fever belongs, some caution is requisite, as inflammatory and nervous fevers may be converted into putrid and malignant, by too hot a regimen, or improper medicines. The duration of these fevers depends mostly on the manner of treating them.

Prognostics.—The most favorable symptoms are, a gentle looseness after the third, fourth, or fifth day, with a warm mild sweat; a smarting red rash, scabs in the nose or lips, watery vesicles; the pulse rising upon the use of wine; deafness coming on towards the decline of the fever, and abscesses in the groin, or under the ears, are all good symptoms. Black urine, or stools, excessive looseness; a hard swelled belly; small dusky, dun, or greenish spots; a ghastly efflorescence, large livid blotches, black spots, sweats profuse, cold or clammy; griping or bloody stools, drowsiness and coldness of the extremities, starting of the tendons, involuntary stools, &c., are generally forerunners of dissolution.

Diet.—In the treatment of this disease, we ought to endeavor, if possible, to counteract the putrid tendency of the humors; to support the patient's strength and spirits; and to assist Nature in expelling the cause of this disease, by gently promoting perspiration and the other evacuations.

Care should be taken to prevent the air from stagnating in the patient's chamber, to keep it cool and pure, and renew it frequently by opening the doors or windows of some adjacent apartment. The breath and perspiration of a person in perfect health, soon render the air of a small apartment noxious; how much sooner, then, will this happen from the breath and perspiration of a person whose whole mass of humors are in a putrid state.

Besides the frequent admission of fresh air, vinegar, lime or lemon juice, or any kind of vegetable acid that can be most easily obtained, should be frequently sprinkled upon the floor, bed, and every part of the room; they may also be evaporated by pouring them on hot iron in the room. Fresh lemon or orange peel, sliced onions, strong scented fresh herbs, as rue, tansy, sage, mints, &c., should be freely distributed about the room, and are very refreshing to the patient. The fumes or scent of tobacco in the room is very disinfectious, when it can be borne.

Few things are of greater importance in this disease than acids, which ought to be mixed in all the patient's food and drink. Therefore, the *boiled buttermilk* is again here extremely applicable, and often little more is required to cure. Orange, lemon, or vinegar whey, may be drunk according to the patient's inclination. They may be rendered cordial by the addition of wine, in such quantity as the

patient's strength seems to require. When he is very low he may drink negus, with only one half water, and sharpened with the juice of bitter lemon, or orange; or a glass of wine now and then.

When the body is bound, a clyster may be administered, or he may drink a decoction of tamarinds, which will both quench his thirst, and promote a discharge by stool. If camomile tea will sit upon the stomach, it is a proper drink in this disease.

The food must be light, as panada, gruel, to which a little wine may be added, if the patient be weak and low; and they ought to be sharpened with the juice of orange, &c., currant jelly, or the like. The patient ought likewise to eat freely of ripe fruits, as roasted apples, &c. Taking a little food or drink, frequently, not only supports the spirits, but counteracts the putrid tendency of the humors.

If he be delirious, his feet and hands ought frequently to be fomented with a strong infusion of camomile flowers. Fomentations of this kind, not only relieve the head, by relaxing the vessels in the extremities, but as their contents are absorbed, and taken into the system, they must assist in preventing the putrescency of the humors.

MEDICAL TREATMENT.—If an emetic be given at the beginning of this fever, it will not fail to have a good effect. If the disease is far advanced, vomits are not quite so safe. The body, however, is always to be kept gently open by clysters, or mild laxative medicines, as small doses of rhubarb, senna, &c.

If the spots should suddenly disappear, the patient's pulse sink remarkably, and a delirium, with other bad symptoms, come on, we would recommend warm cataplasms, or poultices of mustard and vinegar, to be applied to the feet and hands. Saffron cordials may also be given internally.

In the most dangerous species of this disease, when it is attended with purple, livid or black spots, acids, particularly the boiled buttermilk, or whey, prove very successful, even in cases where the spots had the most threatening aspect. But to answer this purpose, they must be taken in large doses, and well persisted in.

In any stage of this disease, the *fever powders* must not be omitted; if necessary, let them be given in such quantity as will keep the pores gently open, and throw off putrefaction.

But if the malignity of the disease becomes formidable, and Nature inclines to a dissolution; or even before these threatening symptoms appear; we may resort with confidence to the use of *fresh killed flesh*, applied warm with natural heat, first upon the pit of the stomach, particularly if the stomach be distressed or obstructed, and then upon the glands in the groins, armpit, neck, the soles of the feet, or over half the surface of the body, according to the urgency of the case. These extract the putridity and poison, and give almost immediate relief; stinking with corruption in a very short time, perhaps in fifteen or twenty minutes, when they should be removed and fresh pieces applied; continually changing in this manner, till the wished-for relief is obtained. For this purpose, fowls are generally the most readily obtained, and they should be cut in two, lengthwise, and instantly applied. It matters not, however, of what animal the flesh is, and that may be used which can be best

spared. Fresh meat quickly absorbs putrefaction. The following anecdote exemplifies it :

The garrison of Gibraltar, when they fear the plague, (which that place is very subject to,) elevate a piece of fresh meat in the air at night ; and if they find it sweet and untainted in the morning, they conclude there is not much danger ; but if it has become putrid, they expect the plague.

Onions, garlics, bruised potatoes freshly dug out of the earth and roasted without washing, till they can be mashed, and applied as poultices to the soles of the feet, or any part of the body, are also very efficacious in extracting the morbific matter, and relieving the system. Even fresh earth, alone, warmed and applied over the body, is considered almost a certain cure for the yellow fever, in the Spanish West Indies. There, when a person is attacked with it, they dig a hole in the earth large enough to receive his whole body, and after warming it a little, place the patient in it, completely burying all except his face, and there let him remain till the fever and taint is extracted, and relief obtained.

If there be a violent looseness, nothing can be more beneficial than plenty of acids, made somewhat cordial, and such things as promote a gentle perspiration, thereby turning the humors outwardly.

If the patient be troubled with vomiting, or nausea, after the proper evacuations have been made from the stomach, a drachm of pearl-ash, or sal æratus, dissolved in an ounce and a half of fresh lemon juice, and made into a draught, with an ounce of simple cinnamon-water, and a bit of sugar, may be given and repeated as often as it is necessary.

If swellings of the glands appear, their suppuration is to be promoted by the application of ripening poultices ; and as soon as there is any appearance of matter in them, they ought to be laid open and the poultices continued. Large ulcerous sores sometimes break out in various parts of the body, in the decline of the fever, of a livid, gangrenous appearance, and a most putrid smell. These gradually heal, upon the application of cleansing poultices, as charcoal and yeast, and the use of acids, tonics, and cordials, internally. In typhus, yeast may be given internally, which calms and relieves the stomach greatly.

Cleanliness, in the strictest sense of the word, is to be most carefully attended to ; therefore, the bed and body linen should be frequently changed, and the excrements instantaneously removed. The patient should be covered lightly with bed clothes, his apartment kept cool and properly ventilated, and acids and aromatics frequently sprinkled about.

When a putrid fever seizes any person in a family, the greatest attention is necessary to prevent the disease from spreading. The sick ought to be placed in a large apartment, as remote from the rest of the family as possible, and those in health ought to avoid all unnecessary communication with him. Any one who is apprehensive of having caught the infection, ought immediately to take an emetic, and work it off with camomile tea, drank plentifully.

Those who wait upon the sick in putrid fever, as well as physicians, ought always to have a piece of sponge, or a handkerchief dip

ped in vinegar, or lemon juice, to smell of, while near the patient. The preparation known by the name of the "*Thieves' Vinegar*," has the reputation in some parts of Europe of being a complete guard against infection, let the exposure be ever so great. This composition was used by four thieves, who, during a great plague at Marseilles, entered the infected and deserted houses, and plundered, unharmed. They were afterwards taken and convicted; when they were promised a pardon on condition that they would reveal the secret of their protection; the composition was as follows:—Infuse in a gallon of the best wine vinegar, one handful each of rue, rosemary, lavender, and sage, and two heads of Spanish garlic, peeled and cut in two. After 24 hours infusion, if any one has occasion to expose himself, he may do it without danger, by drinking a table spoonful of the liquid, and rubbing it on his hands and a little on his breast.

This vinegar, thus prepared, will keep any length of time, well stopped up in bottles, and ought to be kept in every family as it is in many parts of Europe. Many lives might be saved by using it in the first stages of the infection.

In this, as well as the preceding disease, the application of cold to the head, is advantageous in those cases where there is drowsiness or delirium, or where there is great pain in the head, with much anxiety. For this purpose, nothing, in my opinion, can be better than the cooling *anodyne wash*.

When the fever rages high, and there is great heat and constriction upon the surface, the whole skin may be bathed and rubbed with a solution of potash, or lye, not omitting the *fever powders*.

BILIOUS FEVER.

When a continual, remitting or unremitting fever is accompanied with a frequent or copious evacuation of bile, either by vomit or stool, the fever is denominated bilious. This fever generally makes its appearance about the end of summer. It is most frequent and fatal in warm countries, especially where the soil is marshy, and where great rains are succeeded by sultry heats.

In the cure of this fever, the two principal objects to be effected, are, the thorough evacuation of the bile collected in the stomach, and free perspiration. These done, in most cases, all is done. A sufficient quantity of the emetic weed should be given for a vomit, which not only throws out the bile, but at the same time, by its stimulating action upon the fibres of the stomach, produces, by sympathy, an action upon the surface of the body, relaxing the constriction, and producing the wished for perspiration. If this should not be sufficient, however, the *fever powders*, in warm herb teas, may be taken, as necessary.

A purge should be given after the emetic, to cleanse the parts below the stomach; and afterwards the body should be kept open, repeating the emetic if the bile again collects. To prevent nausea and acridity in the stomach, the sal æratus and rhubarb powders, or soda, should be taken occasionally.

After these evacuations, and the fever is broken up, by the re-

moval of the cause, tonics and bitters should be given and continued till the patient is entirely well, to prevent a relapse. Columbo, golden seal, unicorn root, gentian, and the tonic tincture, are very proper.

In cases of violent looseness, the patient must be supported with chicken broths, jellies of hartshorn, and the like. If a bloody flux sets in, it must be treated as the dysentery.

I have given in the preceding pages, as the reader will perceive, a particular description of each species of fever, according to the common classification, together with my method of treatment of them, individually; yet, as was said by the good Buchan, were any one to ask me, what was good for a fever, I could not tell him without knowing the particulars of the patient's case. There cannot be a grosser error, than that of prescribing to the general name of a disease, though thousands of people swallow drugs every day on no better ground; and I consider it one great fault of the present practice of physic, that the *name* of the disease is prescribed for, instead of its *nature*. But this is a natural consequence of a *theoretical education*.

The symptoms and appearances of the particular case, therefore, should guide the administration of remedies. The following practical maxims, applicable to the various grades and symptoms of fever, may therefore make the subject more plain to the understanding:

In agues—Throw out the cold phlegm from the stomach, and break up the foundation of the disease, by a thorough emetic, as the emetic weed—afterwards, if necessary, purge. The fever broke, give warming and strengthening tonics, as the *tonic tincture*, columbo, golden seal, &c. Never "kill the fit," till the *cause* is removed.

In any fever: if the blood is thrown in too great quantity on the brain, causing pain and delirium, apply the *anodyne wash* freely to the head; draughts to the feet and hands, of onions, or garlics, bruised and warmed, poke or scoke root, bruised, roasted potatoes, mustard, vinegar and rye flour: in putrid cases, change these poultices often, also give the *fever powders*, to relax the system and equalize the circulation.

If the fever rages high, or not—the *fever powders*, or other diaphoretics; and, if necessary, bathe the skin with a solution of potash.

If Nature languishes, support her with cordials.

If acidity, or acrid bile prevails in the stomach, give lime water, sal æratus and rhubarb, &c.

If cold night sweats—give acids, as lemon juice, elixir vitriol; five finger leaf tea; and rub the surface of the whole body with woollen cloths.

If the stomach is foul, which is most invariably the case—vomit, and, if necessary, and the patient not too feeble, purge.

Keep the bowels gently open, with laxatives, or clysters, in all cases.

In malignant and putrid cases, give acids plentifully; wine whey, boiled buttermilk, lemon and lime juice, elixir vitriol, cordials, &c.

In putrid fevers, when every thing else fails, and death threatens, apply fresh killed flesh, as before directed; give the *fever powders*; and still have hope.

Regulate the diet chiefly by the cravings of Nature. Never refuse drink.

To moderate the fever, give the spice bush bark in decoction.

SCARLET FEVER.

The *scarlet fever*, is so called, on account of the color of the skin, or the large, red, vivid blotches in it. It happens at any season of the year, but is most common in autumn and the beginning of winter; at which time it often seizes whole families. Children and young persons are most subject to it.

It begins like other fevers, with coldness and shivering, without any violent sickness. Afterwards the skin is covered with red spots, which are broader, more florid, and less uniform than the measles. They continue for two or three days, and then disappear; after which the scarf skin falls off.

Treatment.—If attended with anxiety, dejection, or oppression at the pit of the stomach, the use of cordials is indicated. It is seldom dangerous if left to Nature, without any officious interposition. To drink plentifully of diluting liquids and to be kept cool, is all that is required. There is seldom any occasion for medicines in the mild form of this disease. The patient ought, however, to be kept within doors; be particularly cautious against colds, which will cause it to strike in, and endanger life; abstain from flesh, strong liquors, or any thing heating, and drink freely of diluting liquors, with perhaps a little saffron in them. If the fever run high, the body must be kept gently open by clysters, with perhaps small doses of sal æratus and rhubarb. Many children have perished by the use of the lancet in this fever, which is almost certain death, as also are drastic purges.

To cure the scarlet fever it is only necessary to determine the humours gently to the surface of the body, and prevent their striking in upon the vitals. If proper care is taken of the patient, Nature, in most cases, effects this herself: a little wine, tinctured with saffron, acids, or wheys, may be allowed however. But if Nature sinks, cordials, wine, wine whey, acids, saffron, boiled buttermilk, &c, must be used more freely, and the internal heat and vitality maintained.

The scarlet fever is sometimes attended with putrid or malignant symptoms, in which case it is always dangerous. When this happens, the treatment recommended for putrid fevers is applicable.

If a child is suffered to venture out immediately upon recovery from this fever, a dropsy or bloating often comes on suddenly, and which is more dangerous than the original disease. In this case, if the stomach is filled with black or bilious matter, which may be known by the rejection of all food and medicine, a gentle vomit should be given, (if a child,) as blood root, and repeated as often as necessary. In addition to other medicines, as prescribed in dropsy, poultices of bruised horse radish, or mustard seed, should be applied to the soles of the feet and palms of the hands.

PUTRID SORE THROAT.

The *putrid sore throat*, is a disorder of the malignant kind, which frequently happens in this country. It prevails chiefly in autumn or winter. Delicate children and females are most liable to it. It is readily distinguished from the inflammatory quinsy by the soreness and white specks covering ulcers which appear in the fauces, together with the great debility of the system, small fluttering pulse, and an eruption on the skin of the same nature with that of scarlet fever, which are to be observed in the former; whereas in quinsy, there is always considerable difficulty of breathing, swelling and a tendency to suppurate.

Causes.—*Infection and a putrid condition of the fluids.* The same causes as produce malignant fevers.

Symptoms.—It begins with alternate fits of shivering and heat. The pulse is quick, low, and unequal. The patient complains of weakness and oppression at the breast, and is dejected.—Fulness and soreness of the throat; a sensation of stiffness in the neck, redness of the arms, hands, or breast; frequent sighing, nausea, anxiety about the heart, languidness, repeated sneezings, constant watchfulness, thin crude urine, bloated countenance, swelling of the jaw and salival glands, ulcerations, sloughing of the ulcers, the eyes red and watery, and sometimes vomiting and purging.

Unfavourable symptoms are, an obstinate purging, extreme weakness, ghastly countenance, dimness of the sight, a livid or black color of the spots, frequent shiverings, a weak fluttering pulse. If the eruption upon the skin suddenly disappears or becomes of a livid colour, with a discharge of blood from the mouth and nose, the danger is very great.

If a gentle sweat break out on the third or fourth day, and continue with a slow, and equal pulse; if the sloughs cast off in a kindly manner; the breathing free, and a lively color in the eyes, there is reason to hope for a salutary crisis.

Regimen.—The patient must be kept quiet, and for the most part in bed, as he will be apt to faint when taken out of it. His food must be nourishing and restorative; as gruel, with red wine, jellies, strong broths, &c. His drink ought to be generous, and of an antiseptic quality; as red wine negus, wine whey, boiled buttermilk, acids, &c.

The cure.—All evacuations are injurious. It requires a similar treatment with other putrid fevers, but is the least rebellious of them all. Strengthening cordials alone can be used with safety; and those ought never to be neglected. If, at the beginning of the disease, there is great nausea, or inclination to vomit, the patient may drink an infusion of green tea, or camomile flowers, to cleanse the stomach.

For a gargle, a decoction of witch hazle bark may be used, and

is excellent for destroying the canker. Also an infusion of sage and rose leaves, with honey and vinegar, are good in mild cases. The steam, or fumes of vinegar, myrrh, and honey, received through a funnel, are beneficial.

If the symptoms run high, boiled buttermilk, saffron, and other acids and tonics, must be freely used. Blisters are beneficial, and may be applied behind the ears, or upon the back part of the neck.

If the vomiting prove troublesome, alkalies, as sal æratus (sub carbonate of soda) with rhubarb. Mint tea and a little cinnamon will be very proper for common drink; a little wine may be added to it.

If a diarrhœa should rise in the disease, powerful astringents, must be immediately resorted to, to which may be added, wine and brandy mulled up with spice. Such medicines as determine to the surface of the body, must be used. Every means must be adopted to put an immediate stop to it, as at all periods of this disease diarrhœa is a dangerous symptom. If bleeding from the nose occur, it never proves critical, but on the contrary, threatens the greatest danger, and ought to be immediately stopped by administering strong antiseptics internally, as directed in malignant fever, and by the application of poultices to the feet, and the most powerful astringents to the nose, mouth, or ears, as kino, cranes-bill, alum, &c. Tents may be dipped in a solution of these; and pushed up the nose.

In case of a stranguary, the oil of pumpkin seeds may be given, ten drops, and repeated every fifteen minutes, till relief is had; at the same time the belly must be fomented with warm water; poultices of bruised onions may also be laid on the lower part of the belly, and on the soles of the feet. After the violence of the disease is over, the body should be kept gently open with mild purgatives, as manna, senna, rhubarb, or the like.

If great weakness and dejection of spirits, or night sweats, with other symptoms of a consumption should ensue, we would advise the patient to continue the use of tonics, acids, as elixir vitriol, and to take frequently a glass of generous wine. These, together with a nourishing diet, and riding on horseback, are the most likely means of recovering his strength.

QUINSY, OR INFLAMMATORY SORE THROAT.

This disease is very common, and is frequently attended with great danger, occupying the glands, and frequently extending throughout the whole mucus membrane of the fauces, so as essentially to interrupt the speech, breathing, and swallowing. It prevails in winter and spring, and is most fatal to young people.

Causes.—In general it proceeds from the same causes as other inflammatory disorders, viz.: exposure to cold, an obstructed perspiration, or whatever heats and inflames the blood. The quinsy is often occasioned by omitting some part of the covering usually worn about the neck, sitting near an open window, riding or walking against a cold northerly wind, or any thing that greatly cools the throat

and neck. It may likewise be occasioned by spasmodic constriction, acrid or irritating food; and is sometimes epidemical.

Symptoms.—Difficulty of swallowing, laborious respiration, stiffness of the neck, pricking pains about the cheeks, danger of suffocation, a violent fever, sometimes with, and sometimes without a swelling. The eyes appear red, and the face swells, and the patient is often obliged to keep himself in an erect posture for fear of suffocation; there is a constant nausea and inclination to vomit, and the drink instead of passing into the stomach is often returned by the nose. The patient is sometimes starved at last, merely from an inability to swallow any kind of food.

When the breathing is laborious, with straitness of the breast and anxiety, the danger is great. Though the pain in swallowing be very great, yet if the patient breathes easy there is not so much danger. An external swelling is no unfavorable symptom, but if it suddenly falls, and the disease affects the breast, the danger is very great. A frothing at the mouth, with a swelled tongue, a pale, ghastly countenance, and coldness of the extremities, are fatal symptoms.

Regimen.—Nothing should be taken that will excite inflammation; the food light, and the drink plentiful, diluting, and mixed with acids. The patient should be kept easy and quiet: he should not even attempt to speak but in a low voice. Such a degree of warmth as to promote a constant, gentle perspiration, is proper. When the patient is in bed, his head ought to be raised a little higher than usual. It is strictly necessary that the neck be kept warm, with soft flannel wrapt round it. We cannot here omit observing the propriety of a custom which prevails among the common people in some parts; when they feel any uneasiness about the throat, they wrap a stocking about it all night. So effectual is this simple remedy, that in some places in the old world it passes for a charm. The custom is undoubtedly a good one, and should never be neglected. Currant jelly is an excellent help, and may be taken in the mouth and sucked down leisurely.

Gargles for the throat are very beneficial. They may be made of sage tea, with honey and vinegar. Cooling and resolving poultices may be applied round the neck, as carrots, bruised and warmed, wild indigo root, applied as poultice and fomentation: also, Indian posey, or white balsam, and blue flag root, the potatoe poultice, &c.

There is no disease in which the benefit of bathing the feet and legs in lukewarm water is more apparent; this ought, therefore, never to be neglected.

I will further add the following almost infallible preventative of the quinsy, if applied when it is first discovered to be coming on: a layer of common salt applied round the neck, and a little dissolved in the mouth and sucked; at the same time, let a gentle purge be taken, and warm teas to create a moderate perspiration, and prevent the determination to the neck.

Medicine.—After what is directed above, little appears to be left

for medicine to effect. If the inflammation runs so high as to threaten immediate danger of suffocation, bleeding may be necessary. Otherwise, all that is necessary is, to keep the head cool, the feet warm; the circulation equalized, and the pores open, by relaxing and diluent drinks, making use of the *fever powders*, if the fever runs high; keep the bowels gently open; blisters and clysters, if necessary.

At the commencement of the quinsy, an early emetic will frequently check its formation. Seven drops of oil of amber on a lump of sugar, and kept in the mouth without moving till dissolved, has often produced amazing effects. Gum guaiacum is almost a specific in this disease; half a drachm in powder may be mixed with currant jelly for a dose, and repeated occasionally.

When a suppuration will take place, in spite of our efforts to prevent it, we must then promote it by letting the patient inhale the steam of warm water through a funnel; applying warm poultices, as bread and milk, about the neck, and roasted figs kept constantly in the mouth. It sometimes happens, before the tumor breaks, that the swelling is so great as entirely to prevent any thing getting into the stomach. In this case, the patient can only be nourished by clysters of broth, &c.

In desperate cases, where the breathing is likely to be stopped, the operation of opening the windpipe may become necessary, to save life. With proper treatment, however, this can seldom happen.

The "*anodyne wash*," applied freely to the neck in a beginning quinsy, is excellent to allay inflammation.

MUMPS.

The mumps is a swelling of the glands about the throat, and is generally epidemic. It generally appears in the spring, and young persons of both sexes are more liable to its attacks. It is preceded by heaviness, lassitude, and a general sensation of uneasiness, which continue for several days. Stiffness, pain, and difficulty of motion, is then perceived about the articulation of the lower jaw. A swelling of the glands, situated under the jaws and diffused over the neck, next takes place, which sometimes increases so as to disfigure the countenance greatly. There is a good deal of fever. About the fourth day from the commencement of the swelling the disease is at its height. A gentle moisture then begins to exude from the surface of the swelling, accompanied with a general perspiration of the whole body, which, if it be encouraged by keeping warm in bed, and drinking diluent fluids, appears to form the natural crisis of the disease, and the whole terminates favorably about the sixth day.

But if, from exposure to cold, or improper management, this natural process of the disease be interrupted, a singular translation of the morbid matter takes place. The tumors about the throat suddenly subside, and are followed by swellings of the testicles of the male sex, and of the breasts in the female, accompanied with a fresh exacerbation of the fever. If the swellings of these parts be imprudently checked by exposure to cold, or if they suddenly subside, the

brain is apt to become affected, occasioning convulsions, delirium, and other dreadful symptoms, which finally terminate in death.

In the treatment of this disease, evacuations of all kinds are not only improper but dangerous. If the bowels are much constipated, they may be relieved by a clyster. The patient ought to keep warm in bed, and encourage perspiration by drinking plentifully of diluting liquors, as mint, whey, balm, sage, and such like teas. The effort of Nature to resolve the tumors by exudation should be promoted by covering the parts with soft flannel. If the swellings show a disposition to subside too early, they should be covered with blistering plasters, or rubbed with stimulating liniment.

Should the tumor seat in the testicles, a poultice of boiled beans, or of bean meal, should be applied, which will extract the inflammatory matter. If the swelling should suddenly subside, and any tendency to delirium manifest itself, the whole scrotum ought to be immediately enveloped in a blistering plaster. By this means the dangerous consequences of its falling on the brain are prevented.

It is not an uncommon sequel of this complaint to find sometimes one, and sometimes both testicles, after the inflammation has ceased, gradually shrink in size, and finally wither wholly away. The mumps is decidedly an infectious disease, and rarely attacks but once.

ERUPTIVE FEVERS—SMALL POX.

This disease, which originally came from Arabia, is, since the discovery of vaccination, not so general as heretofore; nor does it appear to be of so malignant a type. It is nevertheless, a most contagious malady; and for many years proved the scourge of civilized, as well as uncivilized nations. The small pox never attacks but once; and children are most liable to have it.

The disease is distinguished into the distinct and confluent kind; the latter of which is always attended with danger. The difference, however, I conceive to consist only in the degree of malignity.

Cause.—It seems to be born with us, and to lie hid until some violent exagitation of the blood, from the introduction of the infectious particle, raises the ferment, and occasions the appearance of those eruptions.

Symptoms.—Children commonly look dull, seem listless and drowsy for a few days before the more violent symptoms of the pox appears. They are likewise more inclined to drink than usual, have little appetite for solid food, complain of weariness, and upon taking exercise are apt to perspire. Then comes on slight fits of cold and heat, by turns, which, as the time of eruption approaches, become more violent, accompanied with pain in the head and loins, vomiting, &c. The pulse is quick, skin hot, and the patient restless.

When asleep, he wakes with a start, or horror, which shows the eruption is approaching; convulsion fits in children, also indicate this.

About the third or fourth day from the time of sickening, the small pox generally begin to appear; sometimes, indeed, they may appear sooner, but that is no favorable symptom. At first they resemble flea bites, appearing first on the face, arms and breast.

The most favorable symptoms are a slow eruption, and an abatement of the fever as soon as the pustules appear. In the mild, distinct kind, the pustules seldom appear before the fourth day, and they generally keep coming out gradually for several days after. Pustules which are distinct, with a florid red basis, and which fill with thick purulent matter, first of a whitish, and afterwards of a yellowish color, are best.

A livid brown color of the pustules is an unfavorable symptom; as also when they are small and flat, with black specks in the middle. Pustules which contain a thin watery ichor are very bad.

A great number of pox on the face is always attended with danger. It is also a bad sign when they run into one another. It is a most unfavorable symptom when purple, brown, or black spots are interspersed among the pustules: they are signs of a putrid dissolution of the blood, and show the danger to be very great. Bloody stools or urine, with a swelled belly, are bad symptoms; as is also a continual strangury. Pale urine, and a violent throbbing of the arteries of the neck are signs of an approaching delirium, or of convulsion fits: when the face does not swell, or falls before the pox comes to maturity, it is very unfavorable. If the face begins to fall about the eleventh day, and at the same time the hands and feet begin to swell, the patient generally does well; but when these do not succeed each other, there is reason to apprehend danger. A brown crust on the tongue is an unfavorable symptom; cold shivering fits at the height of the disease are likewise unfavorable. Grinding of the teeth when it proceeds from an affection of the nervous system, is a bad sign. Adults suffer most: pregnant women generally miscarry.

DIET.—Throughout this disease, be cautious of disturbing Nature in her operations. A little officious meddling disconcerts her, and renders the disorder unmanageable. All that is necessary, generally speaking, during the eruptive fever, is to keep the patient cool and easy, allowing him to drink freely of some weak diluting liquors; as balm tea, barley-water, apples boiled in water; or wine whey, cider whey, or vinegar whey, or barley-water made acid, boiled buttermilk, clear whey, &c.; the more he drinks the better. He should not be confined to his bed, but should sit up as much as he is able, and should have his feet and legs frequently bathed in lukewarm water. His food ought to be light, and he should be as little disturbed with company as possible. Much mischief is done at this period by confining the patient too soon to his bed and plying him with warm cordials, or sudorific medicines. This, like most other popular mistakes, is the abuse of a very just observation—*That where there is moisture on the skin, the pox rise better, and the patient is easier than when it continues dry and parched.* But that is no reason for *forcing* the patient into a sweat. Sweating never relieves unless it comes spontaneously, or is the effect of drinking weak dilu-

ting liquors. The eruptive matter cannot be thrown out at once with a sweat, as in some fevers: a fermentation, or concoction must be gone through with before the infectious matter can be separated from the blood. This Nature effects in her own time. Every thing that heats and inflames the blood, increases the fever, and pushes out the pustules prematurely. This increases the number, makes them run into one another, and they generally fall in before they come to maturity.

The body should be kept open, and the vital principle supported: let the patient have a constant accession of fresh air in his chamber, a clean shirt every other day at farthest, which may in the worst cases be allowed. No two patients should be allowed in the same room. Cleanliness in every thing should be strictly enjoined.

Medicine.—This disease is generally divided into four different periods, viz.: the fever which precedes the eruption; the eruption itself; the suppuration or maturation of the pustules: and the secondary fever. It has already been observed, that little more is necessary during the primary fever, than to keep the patient cool and quiet, allowing him to drink diluting liquors, and bathe his feet frequently in warm water. This is generally sufficient, except perhaps in some adult cases. When a full pulse, dry skin, and other symptoms of inflammation are present, more energetic means must be used; as small doses of the *fever powders*, to relax the system and moisten the skin, poultices to the feet, anodynes, and, if necessary, clysters.

During the first stage of small pox, that is, till the eruption be over, let *small beer* be drank freely to dilute the blood.

If there is nausea, or inclination to vomit, a gentle emetic, as blood root, may be given; and afterwards weak camomile tea, to cleanse the stomach. At the beginning of a fever, Nature generally attempts a discharge, either upwards or downwards, which, if promoted by gentle means, would tend greatly to abate the violence of the disease.

After the pustules have made their appearance, our business is to promote the suppuration, by diluting drink, light food, and, if Nature seems to flag, by generous cordials. When a low, creeping pulse, faintishness, and great loss of strength, render cordials necessary, we would recommend good wine, which may be made into negus with an equal quantity of water, and sharpened with the juice of an orange, the jelly of currants, or the like. Wine whey, sharpened as above, is likewise a proper drink in this case; care being taken not to overheat the patient by any of these things. Excessive restlessness in children should be calmed by a little syrup of poppies.

If the patient be troubled with a strangury, or suppression of urine, which often happens in the small pox, he should be frequently taken out of bed, and if he be able, should walk across the room with his feet bare. When he cannot do this, he may frequently sit on his knees in bed, and should endeavor to pass his urine as often as he can. In the mean time, and when these do not succeed, ten drops of the oil of pumpkin seeds, for an adult, may be taken every thir-

ty minutes, till relief is obtained ; or an infusion of clivers may be drank, as necessary. A plentiful discharge of urine greatly relieves the patient in this disease.

If the mouth be foul, and the tongue dry and chapped, it ought frequently to be washed and gargled with a mixture of water, honey and vinegar.

When purple, black, or livid spots appear among the small pox, tonics and antiseptics must be immediately administered, as yeast, sharpened with elixir vitriol. The patient's drink ought likewise in this case to be generous, as wine, or strong negus, acidulated with elixir vitriol, vinegar, lemon juice, &c. This treatment is also necessary when the matter in the pustules is thin and not duly prepared.

When the eruptions strike in suddenly, before they have arrived at maturity, the danger is very great. In this case blistering plasters must be applied to the wrists and ancles, and draughts to the feet ; and the patient's spirits must be supported with cordials.

The most dangerous period of this disease, is what we call the *secondary fever*. This generally comes on when the small pox begin to blacken, or turn on the face ; and most of those who die of the small pox are carried off by this fever.

Nature generally attempts, at the turn of the small pox, to relieve the patient by loose stools. Her endeavours this way are by no means to be counteracted, but promoted, and the patient, at the same time, supported by food and drink of a nourishing and cordial nature.

If, at the approach of the secondary fever, the pulse be very quick, hard, and strong, the heat intense, and the breathing laborious, with other symptoms of inflammation of the breast, the patient must be immediately bled. But if the patient be faintish, the pustules become suddenly pale, and if there be great coldness in the extremities, blistering plasters must be applied, and the patient supported with generous cordials. Wine and even spirits have sometimes been given in such cases with amazing success.

As the secondary fever is, in a great measure, if not wholly owing to the absorption of matter, it would seem reasonable to suppose that the pustules, as they come to maturity, should be opened. By this means, the secondary fever might always be lessened if not prevented. When the pustules begin to turn of a yellow color, they may be opened with a lancet or needle, and the matter be absorbed with a little rag, or lint. As they fill again, let the opening be repeated. Opening the pustules not only relieves the patient, but also in a great measure, prevents the disagreeable pitting, which spoils many a handsome face.

It is generally necessary, after the small pox are gone off, to purge the patient. If, however, the body has been open through the whole course of the disease, or if buttermilk and other things of an opening nature have been drunk freely, after the height of the small pox, purging becomes less necessary ; but it ought never wholly to be neglected :—For young children, senna with a little rhubarb, may be used, and given in small quantities till it operates. For a child five or six years of age, sharper purges may be used, as rhubarb, in divided doses, and repeated every third or fourth day, three or four

times. For older children and adults, the dose must be proportionate.

When a cough, a difficulty of breathing, or other symptoms of consumption succeed to the small pox, the treatment directed in consumption becomes necessary.

KINE POX.

Vaccination with the kine, or cow pock, is now fully established to be an antidote against the small pox. This was discovered and introduced about the beginning of the nineteenth century, by Dr. Jenner, an Englishman; since when, although at first, like every other improvement in medicine, it was frowned upon and prescribed by the ruling faculty, it has come into such general use, that the loathsome small pox is now nearly extinguished.

This discovery arose from the following circumstances:—In many parts of England, the cows are liable to an eruption on their paps or udders, which was occasionlly communicated to the hands or arms of those who milked them, producing an ulcer, and some degree of fever; and it had been observed that those who had undergone this disease, known by the name of cow pock, were not liable to the small pox. This was noticed by Dr. Jenner, and he satisfied himself further by experiments. He ascertained that it was a much milder disease than the small pox, and that it effectually secured those who had been infected with it, from afterwards being liable to the small pox infection—that the vaccine-pock was not infectious but by inoculation—and that it was never fatal.

The process of inoculation is as follows:

1. Take the watery slime, at about the sixth or eighth day, from the arm of a healthy person who has been inoculated, while the blister is still in its clear state; for when it becomes yellow, it is not so certain to give the infection.

2. Raise the scarf skin on the arm, about midway between the shoulder and elbow, with the point of a lancet or needle, into a little cup, so deep that the water will just rise in it; then introduce a small drop of the vaccine matter, such as you can carry on the point of your lancet or needle, into the raised cup; then cover it with a little lint, or clean cotton. In a few hours the lint may be removed. and if the infection has taken, it will show a little inflammation in forty-eight hours. All excesses in eating, drinking, and exercise, should be avoided, as the system will be thoroughly affected; and frequently the person will experience chills and a slight fever, with kernels in their groins and under their arms; and the sore on the arm may acquire considerable size. If it is necessary to carry the infection any distance, or time, a cotton thread may be saturated with the fresh matter, dried moderately before a fire, and dropped into a vial. This may be cut to pieces, and moistened with spittle on a bit of glass, and the bigness of half a pin's head will be sufficient to inoculate a person. If it is intended to preserve the infection for a considerable time, the first scab should be saved, taken off as soon as the watery state subsides. Seal this up in a vial, and it will retain its power of inoculating for years.

It has been ascertained that the matter of a single pustule, mixed or dissolved in one quarter of an ounce measure of warm water; such diluted matter excited as distinct a vaccine pock, by inoculation, as an equal quantity of undiluted matter; and was attended with the same inflammation and constitutional affection. This shows that a great many persons may be inoculated from a single vaccine pock.

Could all parents be persuaded to inoculate their children with vaccine matter soon after birth, the small pox might be entirely eradicated in time. That is the proper time for doing it; although from the inconsiderateness of people, vaccination is generally delayed till the small pox has actually commenced its ravages among them, when in the midst of alarm and confusion, they fly to it for relief; and before this is obtained, perhaps numbers have fallen victims. This culpable delay, too, is well calculated to keep the infection in the country, and preserve it for posterity.

CHICKEN POX.

This disease, like the small pox, seems to depend upon a specific contagion, and affects a person but once in his life. No danger ever attends it.

The eruption is sometimes preceded by chilliness, flushings and heat, pains in the head, and back, thirst, restlessness, and a quick, pulse; but at other times no such symptoms are perceptible. About the second or third day the pustules become filled with a watery fluid, which is never converted into yellow matter, as in the small pox, and about the fifth day they usually dry away, and are formed into crusts or scabs.

In general, it is only necessary to make use of a spare regimen on the first appearance of the eruption, and to give one or two cooling purgatives afterwards.

MEASLES.

The measles appeared in Europe about the same time with the small pox, and have a great affinity to that disease. They both came from the same quarter of the world, are both infectious, and seldom attack the same person but once. The measles are most common in the spring season, and generally disappear in summer. The disease itself, when properly managed, seldom proves fatal; but its consequences are often very troublesome.

Symptoms.—The measles, like other fevers, are preceded by alternate fits of heat and cold, with sickness and loss of appetite. The tongue is white and generally moist. There is a short cough, a heaviness of the head and eyes, drowsiness and a running at the nose: inflammation and heat in the eyes, accompanied with a defluxion of sharp rheum, and great acuteness of sensation, so that they cannot bear the light without pain. The eyelids frequently swell so as to occasion blindness. The patient generally complains of his throat,

and a vomiting or looseness often precedes the eruption. The stools in children are commonly greenish; they complain of an itching of the skin and are remarkably peevish. Bleeding at the nose is common, both before and in the progress of the disease.

About the fourth day, small spots, resembling flea bites, appear, first upon the face, then upon the breast, and afterwards upon the extremities; these may be distinguished from the small pox by their scarcely rising above the skin, and never suppurating. The fever, cough, and difficulty of breathing, instead of being removed by the eruption, as in the small pox, are rather increased, but the vomiting generally ceases. At the sixth or seventh day, the muscles turn pale on the face, and afterwards upon the body; so that by the ninth day they entirely disappear. The fever, however, and difficulty of breathing, often continue, especially if the patient has been kept upon too hot a regimen; purple spots may likewise be occasioned by this fever.

A violent looseness sometimes succeeds the measles, in which case the patient's life is in imminent danger.

Such as die of the measles, generally expire about the ninth day from the invasion, and are commonly carried off by an inflammation of the lungs.

The most favorable symptoms are, a moderate looseness, a moist skin, and a plentiful discharge of urine.

When the eruption suddenly falls in, and the patient is seized with a delirium, he is in the greatest danger. If the measles turn too soon of a pale color, it is an unfavorable symptom, as are also, great weakness, vomiting, restlessness, and difficulty of swallowing. Purple or black spots, appearing among the measles, are very unfavorable. When a continual cough or looseness succeeds the disease, there is reason to suspect an approaching consumption of the lungs.

THE CURE.—The measles require a treatment not much different from the small pox. Our business is to assist Nature by proper cordials, in throwing out the eruption, if her efforts be too languid. Blood-letting is almost certain death. The cool regimen is necessary here, as in the small pox. The food must be light, and the drink diluting. The drink may be cider whey, vinegar whey, buttermilk, or for weakly children, thin broth; decoctions of liquorice, with marsh-mallow roots and sarsaparilla, infusions of flaxseed, or of the flowers of elder, balm tea, barley-water, and small beer, are also suitable. These, if the patient be costive, may be sweetened with honey.

Medicines are seldom necessary during this disorder; but as soon as the eruptions begin to disappear, cathartics should be administered, as in the small pox, which, for obvious reasons, are necessary in all eruptive fevers. Bathing the feet and legs frequently in lukewarm water, both tends to abate the violence of the fever, and promote the eruption.

The patient is often greatly relieved by vomiting. When there is a tendency this way, it ought to be promoted by drinking warm water, or weak camomile tea, or even blood root.

When the cough is very troublesome, and breathing difficult, the

patient may hold his head over the steam of warm water, and draw the vapor into his lungs. He may also take softening and demulcent cough preparations, with the addition of a little anti-spasmodic or nervine, as the valerian or lady-slipper. If, at the turn of the disease, the fever assumes new vigor, and there appears to be great danger of suffocation, a blister must be applied to the stomach, and draughts to the feet, to prevent the load from being thrown on the lungs; where, if an inflammation should fix itself, the patient's life will be in imminent danger.

In case the measles should suddenly disappear, or before their proper time, it will be necessary to pursue the same method which we have recommended when the small pox recede. The patient must be supported with wine and cordials, tinctured with saffron; and blisters applied to the legs and arms. Warm poultices may likewise be applied to the feet and palms of the hands; diaphoretic teas, &c. When inflammation attacks the chest, a warm bath, strongly impregnated with salt, has proved a powerful remedy.

If the symptoms manifest a tendency to a putrid or malignant form of disease, they must be treated accordingly, as directed in slow, nervous fever.

If purple or black spots appear, the patient's drink should be sharpened with elixor vitriol, small beer, and yeast; buttermilk and tonics, as directed in the small pox. Opiates, or syrup of poppies, may sometimes be useful.

After the measles are gone off, the patient ought to be purged, but not with salts. And it will always be well also, to purify the juices with some cleansing syrup, and thereby prevent the serious consequences so often resulting from the measles, from infectious matter centering upon the lungs, or some internal part, causing catarrh, asthma, ulceration, &c. Patients recovering from this disease, should also be careful what they eat or drink. Their food should be light for some time, and taken often, and their drinks diluting, as buttermilk, whey, &c.; at the same time guarding against colds.

Should a cough and other symptoms of consumption remain after the measles, the treatment recommended for the consumption becomes proper. The "balsam of life" is a very good medicine after the measles. The patient ought to remove to a free air, if in a large town, and take daily exercise on horseback.

ERYSIPELAS, OR ST. ANTHONY'S FIRE.

The St. Anthony's fire is an external inflammation, which generally affects the face, and sometimes the breast. It most commonly attacks between the age of thirty and forty; and persons of a sanguine habit are most liable to it. Every part of the body is liable to be attacked by erysipelas, but it most frequently seizes the legs and face, especially the latter.

Causes.—Violent passions or affections of the mind. Those which produce an internal inflammation, or an acrid humor, heats

and colds, or obstruction of any customary evacuation; sudden exposure to cold when the body has been greatly heated, by drinking to excess, &c.

Symptoms.—The St. Anthony's fire attacks with a shivering, thirst, loss of strength, pain in the head and back, heat, restlessness, and a quick pulse; and sometimes vomiting, and delirium. On the second, third, or fourth day, the part swells, becomes red, and small pustules appear; at which time, the fever generally abates. When it seizes the foot, the parts contiguous swell, the skin shines, and if the pain be violent, it will ascend to the leg, and will not bear to be touched.

When it attacks the face, it swells, appears red, and the skin is covered with small pustules, filled with clear water. One or both eyes are generally closed with a swelling; there is inflammation of the throat, and difficulty of breathing and swallowing. If the mouth and nostrils be dry, and the patient drowsy, there is reason to suspect an inflammation of the brain.

If the erysipelas affects the breast, it swells and becomes exceedingly hard, with great pain, and is apt to suppurate. There is a violent pain in the armpit, on the side affected, where an abscess is often formed.

If, in a day or two, the swelling subsides, the heat and pain abate, the color and part turns yellow, and the scarf skin breaks and falls off in scales, the danger is over. This disease is seldom dangerous; but when the constitution is bad, the legs will sometimes swell to a prodigious size, and the cure proves difficult. It has often proved fatal to people in the decline of life, who were of a scorbutic habit.

When the erysipelas is large, deep, and affects a very sensible part of the body, the danger is great. If the red color changes into a livid black, it will end in mortification. Sometimes the inflammation cannot be discussed, but comes to a suppuration; in which case gangrene or mortification often ensue.

Such as die of this disease, are commonly carried off by the fever, which is attended with difficulty of breathing, and sometimes delirium and great drowsiness. They generally die about the seventh or eighth day.

Regimen.—The patient must be neither kept too hot nor too cold. When the disease is mild, it will be sufficient to keep within doors, and promote perspiration by diluting liquors. The diet ought to be slender, and of a moderately opening and moistening quality, as gruel, panada, chicken or barley broth, with cooling herbs, or fruits; avoiding strong meats, drinks, spices, and all things that may heat and inflame the blood. The drink may be wheys, an infusion of elder flowers, and such like. If the pulse is low, and the spirits sunk, the patient must be supported with negus, and other things of a cordial nature. A little wine may be mixed with his food.

Medical treatment.—My method is simply this: apply the *anodyne wash*, plentifully, with cloths, to the inflamed part; keep the

bowels gently open; and the system relaxed, the pores open, and the circulation equalized, by diluent and diaphoretic drinks. This has never failed me of giving speedy relief.

Bathing the feet and legs frequently in lukewarm water, when the disease attacks the face and brain, has an excellent effect. It tends to make a derivation from the head, and seldom fails to relieve the patient. When bathing proves ineffectual, poultices of onions, &c., may be applied to the soles of the feet, for the same purpose.

When the erysipelas leaves the extremities and seizes the head, so as to occasion a delirium or stupor, it is absolutely necessary to open the body. If clysters and mild purgatives fail, stronger ones must be given. Blistering plasters may likewise be applied to the neck, or behind the ears, and sharp poultices laid to the soles of the feet.

When the inflammation cannot be discussed, and the part has a tendency to ulcerate, it will then be proper to promote suppuration, by the application of ripening poultices, with saffron, warm fomentations, and such like.

When the black, livid, or blue color of the part shows a tendency to mortification, tonics and acids must be administered, as recommended in the small pox. It will also be proper to apply antiseptics to the part, as charcoal and yeast.

In what is commonly called the *scorbutic erysipelas*, which continues for a considerable time, it will be necessary to give such things as purify the blood and promote perspiration. Such as are liable to frequent attacks of the St. Anthony's fire, ought carefully to guard against all violent passions, to abstain from strong liquors, and fat and highly nourishing food; and to take sufficient exercise, carefully avoiding extremes of heat and cold. Their food should be of a cooling nature, and their drink diluting, such as small beer, whey, buttermilk, and such like. They should never suffer themselves to be costive, to obviate which, if necessary, they should use clysters.

PLEURISY.

A PLEURISY is an inflammation of the *pleura*, or membrane that lines the rib or rib muscles; the first is called the *true*, and the latter, the *bastard* pleurisy. The true pleurisy is distinguished into the moist, and the dry. In the former, the patient spits freely; in the latter, none at all. The bastard pleurisy is more external, and chiefly affects the muscles between the ribs. Pleurisies are most common in the spring.

CAUSES.—The pleurisy may be occasioned by whatever obstructs perspiration; as exposing the body to cold after exercise; cold, northerly winds; drinking cold water when hot; sleeping without doors, on damp ground; wet clothes; plunging into cold water when covered with sweat. It may likewise be occasioned by the stoppage of the usual evacuations, as old ulcers, issues, sweating of the feet; the sudden striking in of any eruption, as the itch, measles, or small pox; also, by violent exercise, as running, wrestling, leaping, lifting great weights, blows on the breast, &c.

Symptoms—This, like most other fevers, generally begins with chilliness and shivering, which are followed by heat, thirst, and restlessness. To these succeeds a violent pricking pain in one of the sides, among the ribs, which is greatly increased on drawing in the breath. Sometimes the pain extends toward the back bone, sometimes toward the fore part of the breast, and at other times toward the shoulder-blades.

The pulse in this disease is commonly quick and hard, the urine high colored; and if blood be let, it is covered with a tough crust, or buffy coat. It is attended with an almost incessant cough, a dry furred tongue, the breathing small, frequent, and difficult, great anxiety about the heart, perpetual moaning, restlessnes, &c.

The cure.—Nature generally endeavors to carry off this disease by a critical discharge of blood from some part of the body, by expectoration, sweat, loose stools, thick urine, and the like. We ought, therefore, to second her intentions, by lessening the force of the circulation, relaxing the vessels, diluting the humors, and promoting expectoration.

For these purposes, the diet ought to be cool, slender, and diluting; avoiding every thing of a heating nature. His drink may be whey, buttermilk, or camomile tea. Barley-water, with a little honey, or currant jelly mixed with it, is likewise a very proper drink. It is made by boiling an ounce of pearl or hulled barley, in three pints of water to two, and strained. The decoction of figs, raisins and barley, is likewise very proper; as also, flaxseed tea, slippery elm, and liquorice, maiden hair, and such like demulcents. These and other diluting liquors are not to be drank inl arge quantities at a time, but the patient ought to be continually sipping them, so as to render his mouth and throat always moist. All his food and drink should be taken lukewarm.

The patient should be kept every way quiet and easy. His hands and feet ought frequently to be bathed in warm water.

Warm fomentations applied to the sides and chest, must not be omitted, particularly if the case is severe. Hops, or oats, warmed with vinegar, and laid on as warm as can be borne, for a fomentation, affords great relief; or a poultice of fresh dug roasted potatoes may be applied over the chest as warm as possible; this rarely fails of relieving the constriction, or spasms. The "anodyne wash" may also be applied freely, warm. The vapor bath may also be applied to the sides with pipes. At the same time, strong draughts should be applied to the feet, as in fevers. Keep up the sweat till the pain is gone.

The relaxation and perspiration may be assisted, internally, by the *fever powders*, Indian turnip, *pleurisy root*, and sweating drinks.

Blood-letting is commonly practised in this disease, and is considered by many indispensible The relief it generally gives is certainly some excuse for it; but this relief is apparent only in proportion as the means here recommended are neglected. I have never found it necessary to resort to blood-letting; the treatment here laid down has never failed of quickly relieving the pleurisy in my practice. And when this is sufficient, certainly every one must allow it

to be far preferable; because in this case, when the disease is conquered, the patient is left in a measure, well; whereas, when the blood has been profusely drawn, the patient is left feeble and extremely debilitated, requiring months perhaps to regain his strength.

The blood may be many ways attenuated or thinned, without bleeding; as well as the pain of the side eased; this last may be done with fomentations, in the manner above described, and blistering. Cabbage leaves, applied warm to the side, greatly relax the parts. Fomentations of camomile and elder flowers, and mallows, are also proper. The herbs may be put into a flannel bag, and laid to the side, warm.

Cathartics are generally proper in the beginning of a pleurisy. The mandrake has often afforded astonishing relief. Afterwards, if the patient be costive, a clyster of thin water gruel, or of barley-water, in which a handful of mallows, or some emollient vegetable has been boiled, may be daily administered.

The expectoration may be promoted by sharp, mucilaginous medicines; as Indian turnip, and comfrey; marsh mallows, low mallows, skunk cabbage, sharpened with vinegar, or lime juice, and sweetened with honey; slippery elm, liquorice, blood root, buck horn brake, flax-seed; olive oil, or sweet oil, oil of sweet almonds, gum arabic, &c. To some of these may be added, syrup of poppies, or a little camphor.

The seneca rattle-snake root, in decoction, is by some, considered almost a specific in the pleurisy. It may be prepared in proportion of an ounce boiled to a pint; and, after proper evacuations, the patient may take two, three, or four table spoonsful of this decoction, according as the stomach will bear it, three or four times a day. If it should vomit, a little peppermint or cinnamon may be added. As this medicine promotes perspiration and urine, and likewise keeps the body easy, it must be of great service.

On recovery, it will be well to continue, for a time, the drinks of buttermilk, whey, and such like; and if the patient is much debilitated, bitters and tonics may be used.

Bastard pleurisy.—This species of pleurisy goes off by keeping warm for a few days, drinking plenty of diluting liquors, and observing a cooling regimen.

It is known by a dry cough, a quick pulse, and a difficulty of lying on the affected side; which last does not always happen in the true pleurisy. Sometimes this disease proves obstinate; when blistering may be resorted to. If nausea prevails, a gentle vomit may be given.

INFLAMMATION OF THE DIAPHRAGM.

This disease is so nearly connected with the pleurisy, and resembles it so much, in the manner of treatment, that it is scarcely necessary to consider it as a separate disease.

Symptoms.—An acute, continual fever, attended with an inflammatory pain, which is greatly increased by every inspiration, or

coughing, sneezing, or evacuations of the excrements, or urine; a sensation of fulness in the stomach, nausea, deep, quick, small, and painful respiration; the patient endeavoring to prevent the motion of the diaphragm; perpetual, but not violent delirium, frequent laughing, and great anxiety about the heart.

This disorder is always extremely dangerous. If the diaphragm suppurates, the pus either falls into the cavity of the abdomen, or, breaking upwards, produces an empyema; either case is almost certain death.

THE CURE.—The regimen and medicine are in all respects, the same as in pleurisy. We shall only add, that, in this disease, emollient clysters are peculiarly useful, as they relax the bowels, and by that means make a derivation from the part affected. They may be administered every hour.

INFLAMMATION OF THE LUNGS.

As this disease affects an organ which is absolutely necessary to life, it must always be attended with danger. Persons who abound with thick blood, whose fibres are tense and rigid, who feed upon gross aliment, and drink strong liquors, are most liable to an inflammation of the lungs. It is more fatal to those who have a flat breast, and narrow chest, and to such as are afflicted with an asthma, especially in the decline of life. Sometimes the inflammation reaches to one lobe of the lungs only; at other times the whole organ is affected, in which case the disease generally proves fatal.

CAUSES.—An inflammation of the lungs is sometimes a primary disease, and sometimes it is the consequence of other diseases, as a quinsy, a pleurisy, &c. It proceeds from the same cause as pleurisy, viz.: an obstructed perspiration, from cold, wet clothes, &c., or from an increased circulation of the blood by violent exercise, the use of ardent spirits, and such like. The pleurisy and inflammation of the lungs are often combined.

Those who have labored under a former attack of this complaint are much pre-disposed to returns of it.

SYMPTOMS.—Most of the symptoms of inflammation of the lungs are the same as in pleurisy; only in the former, the pulse is more soft, and the pain more obtuse and less acute; but the difficulty of breathing, and oppression of the breast is generally greater. The pain is prodigiously increased on coughing, or a full inspiration.

DIET.—As the regimen, &c. are in all respects the same as in pleurisy, we shall not here repeat them, but refer the reader to the treatment of that disease. It may not, however, be improper to add, that the steam of warm water, taken in by the breath, which serves as a kind of internal fomentation, helps to attenuate the impacted humors. If the patient have loose stools, and is not weakened by them, they are not to be stopped, but rather to be promoted

by the use of emollient clysters. The diet must be very slender, as weak broths, sharpened with the juice of orange or lemon, and such like.

The patient at the beginning is cold and hot by turns, has a small quick pulse, feels a sense of weight upon his breast, breathes with difficulty, and sometimes complains of a pain and giddiness in his head. His urine is usually pale, and his color very little changed.

It will be very necessary to assist expectoration by some sharp medicines, such as have been recommended in the pleurisy. Blisters have generally a good effect, and ought to be applied early. If the patient do not spit, he must have a gentle purge administered. Afterwards, his body may be kept open by clysters, and expectoration promoted.

The most favorable termination of inflammation of the lungs is by resolution, followed by copious expectoration, great flow of urine with a sediment, diarrhœa, mild sweats, hemorrhage from the nose, &c. When these take place the febrile symptoms abate.

A high degree of fever, attended with delirium, much difficulty of breathing, acute pain, a dry cough, or an expectoration of a dark black colour, sudden cessation of pain, or of the expectoration, followed by a lividness of the lips and countenance, and sinking of the pulse, denote great danger.

When an inflammation of the breast does not yield to blistering, diluents, fomentations and other evacuations, it commonly ends in suppuration, which is more or less dangerous according to the part where it is situated. When this happens in the pleura it sometimes breaks outwardly, and the matter is discharged by the wound. When the suppuration happens within the substance or body of the lungs, the matter may be discharged by expectoration; but if the matter floats in the cavity of the breast between the pleura and the lungs, it can only be discharged by an incision made between the ribs.

If the patient's strength do not return after the inflammation is to all appearance removed; if his pulse continue quick, though soft, his breathing difficult and oppressed; if he have cold shiverings at times, his cheeks flushed, his lips dry; and if he complains of thirst and want of appetite, there is reason to fear a suppuration, and that a phthisic or consumption of the lungs will ensue.

When this disease proves immediately fatal it is generally by an effusion of blood or lymph into the cellular texture of the lungs, so as to occasion suffocation, which usually happens between the third and seventh day; but it may likewise prove fatal by termination either in suppuration or gangrene. This last, however, very seldom happens.

INFLAMMATION OF THE BRAIN.

This is sometimes a primary disease but often only a symptom of some other malady, as the inflammatory, eruptive, or spotted fever, &c. It is more common, however, as a primary disease, in warm climates, and with persons in the prime of life. The pas-

sionate, the studious, and those whose nervous system is irritable in a high degree, are most liable to it.

Causes.—Night watching, with hard study, hard drinking, anger, grief, or anxiety; stoppage of usual evacuations, as the bleeding piles, menses, &c.; imprudent exposure to the heat of the sun, and sleeping in the hot sun with the head uncovered: the striking in of erysipelas, &c. It may also be occasioned by blows or bruises upon the head.

Symptoms.—Inflammation of the brain is ushered in by pain in the head, redness of the eyes, a violent flushing of the face, disturbed sleep, dryness of the skin, costiveness, a retention of urine, a small dropping of blood from the nose, singing of the ears, and extreme sensibility of the nervous system.

When the inflammation is formed, the symptoms in general are similar to those of an inflammatory fever. The pulse indeed, is often weak, irregular, and trembling; but sometimes it is hard and contracted. When the brain itself is inflamed, the pulse is always soft and low; but when the inflammation only affects the membranes of the brain, it is hard. A remarkable quickness of hearing is a common symptom of this disease; but that seldom continues long. It is also known by the absurd behaviour of the patient; incoherent, wild, or unmeaning discourse; redness, rolling or glaring of the eyes; throbbing, and a tremulous motion of the temple artery; a constant drowsiness, without being able to sleep.

A constant trembling and starting of the tendons is an unfavorable symptom, as are also a suppression of urine, a total want of sleep, a constant spitting and grinding of the teeth. A true inflammation of the brain is often mortal on the third, fourth, or seventh day, at farthest. If it does not come to its height on those days, it frequently terminates in incurable madness, or lethargy. White stools, or white urine are the harbingers of death. Spitting at the by-standers, gnashing or grinding of the teeth, snatching of the bed clothes, are forerunners of a dissolution.

If accompanied with laughter, if a gentle sleep comes on, a free perspiration, a copious discharge of blood from the nose, the bleeding piles, and the delirium abates at times, a recovery may be expected.

Regimen.—The patient ought to be kept very quiet. Company, noise, and every thing that affects the senses, or disturbs the imagination, increases the disease. Even too much light is hurtful; for which reason the patient's chamber ought to be a little darkened. It is not, however, necessary to exclude the company of an agreeable friend, as this has a tendency to soothe and quiet the mind. The patient must as far as possible be soothed and humored in every thing. Contradictions will ruffle his mind and increase his malady. A little of any thing that the mind is set upon, though not quite proper, will hurt the patient less than a positive refusal. In a word, whatever he was fond of, or used to be delighted with while in health, may here be tried, as pleasing stories, soft music, or what-

ever has a tendency to soothe the passions and compose the mind; as the soft noise of water distilling by drops into a bason, and the patient trying to reckon them. Any low uniform sound has a tendency to procure sleep.

The aliment ought to be light, as panada, water gruel, sharpened with acids and jellies. The drink small, diluting and cooling, as whey, barley water, and the like.

Treatment.—In an inflammation of the brain, nothing more certainly relieves the patient than a free discharge of blood from the nose. When this does not happen spontaneously, it may be provoked by putting a straw, or some sharp instrument up the nostrils.

In the cure the chief thing to be attended to is to check the determination of blood to the brain. This may be attempted by applying blisters to the soles of the feet, and on the back of the neck, warm poultices and fomentations to the extremities, leeches to the temples, bleeding in the jugular vein; or arm, if necessary, and cold applications to the head. For this last purpose, the cooling "anodyne wash" should be profusely and constantly applied over the whole head; this will give the most grateful relief, and allay the inflammation.

Give smart purgatives, and keep the bowels open with clysters two or three times a day. The patient's feet and legs may be frequently bathed in warm water, and he may sit over the steams of hot water.

To relax the constriction, and restore equal circulation throughout the body, the *fever powders*, may be used, joined with diaphoretic drinks. Anodynes may be given if necessary.

MADNESS.

Madness is a total privation of the due exercise of reason, from some accidental injury to the organs of thought. It is caused by a preternatural collection of the vital heat, or nervous influence in the brain, with some impediment to its usual course from thence along the nerves. This disorder is attended with a little or no fever.

The symptoms are, a languid redness of the face, wildness and rolling of the eyes, ghastly staring, mischievousness, absurd discourse, a plethora.

If attended with laughter and raving it is easier to be removed than if accompanied with sober, studious fixedness of the thoughts on a particular subject.

The cure.—Remove the vital heat from the brain, by cold applications to the head, as the "anodyne wash." Open a vein: if a fever takes place, it is a good sign; bleeding should be often repeated, for no persons can bear the loss of blood so well as maniacs, nor is there any case in which it is so necessary to draw it off, and so many times. Strong purges should be given, and emetics can scarcely be given too often: they equalize the circulation throughout the body. Blisters may be applied to the back of the neck.

In the declination of this distemper, the greatest care should be taken to prevent a relapse. The cold bath is then peculiarly serviceable, as is also the plentiful use of broth. Antispasmodics are proper throughout the whole disease.

INFLAMMATION OF THE EYES.

This disease may be occasioned by external injuries; as blows, burns, bruises, and the like. It may likewise proceed from dust, quicklime, and other substances getting into the eyes. It is often caused by the stoppage of customary evacuations; as the healing up of old sores, drying up of issues, suppression of sweating of the feet, &c. Long exposure to night air, especially in cold northerly winds, or whatever suddenly checks perspiration, is very apt to occasion inflammation of the eyes. It is often occasioned by night watching, reading by candle-light, excess in venery, and drinking spirituous liquors; the acrid fumes of metals, and some kinds of wood. Sometimes an inflammation of the eyes proceeds from a venereal taint, and often from a gouty or scrofulous habit. It may likewise be occasioned by hairs of the eyelids turning inwards and irritating the eye. Sometimes the disease is epidemic, especially after wet seasons, and I have frequently known it to prove infectious, often going through a whole family; this description is very prevalent in some parts of the western states. Inflammations of the eyes often succeed the small pox or measles.

Symptoms.—An inflammation of the eyes is attended with acute pain, heat, redness, and swelling. The patient is not able to bear the light, and sometimes he feels a pricking pain, as if his eyes were pierced with a thorn. Sometimes he imagines his eyes are full of motes, or thinks he sees flies dancing before him. The eyes are filled with a scalding rheum, which rushes forth in great quantities whenever the patient attempts to look up. The pulse is generally quick and hard, with some degree of fever.

A slight inflammation of the eyes, especially from an external cause, is easily cured; but when the disease is violent and continues long, it often leaves specks upón the eyes, or dimness of sight, and sometimes total blindness.

If the patient be seized with a looseness, it has a good effect; and when the inflammation passes from one eye to the other it is no unfavorable symptom.

Cure.—If the inflammation proceed from a scrofulous or venereal taint, or any vitiation of the humors, the blood must first be cleansed with the "anti-mercurial," or similar purifying syrups. In this way the *cause* is removed. If there is great heat in the head, cooling applications should be made, as the "anodyne wash;" this will allay the inflammation. In severe cases of inflammation, leeches may be applied to the temples, or under the eyes; or blood may be let from the jugular vein, or from the arm.

This disease is often constitutional—of course, whon it is so, ge-

neral remedies must be used; it is a mistaken notion that "eye-waters," &c. are always proper and necessary; generally they do more hurt than good, and often ruin the eye by their irritating effect.

Purging and diluting medicines are not to be neglected. Cathartics draw the humors downwards from the head; and diluents and diaphoretics equalize the circulation, and take off the pressure from the head and eyes as well as throw out humors. The patient ought also to drink freely of wine whey or buttermilk on going to bed.

If the inflammation does not yield to these evacuations, blisters must be applied to the temples, behind the ears, on the face, or upon the neck, and kept open for some time, by applying wilted cabbage leaves; or the blisters may be renewed. I have seldom known these, if long enough kept open, fail to remove the most obstinate inflammation of the eyes. When the disease is of long standing, I have seen extraordinary effects from a seton in the neck, or between the shoulders. It should be put upwards and downwards, or in the direction of the spine.

Sneezing snuffs, as bayberry bark, pulverized, should not be omitted.

For the purpose of allaying the heat and inflammation in the eyes, a fomentation of hops boiled in clean water, may be used. They possess an anodyne quality, and give great relief; a poultice of them, put in a gauze bag, and laid warm over the eyes, on going to bed, is also an excellent help. Sydenham's eye-water, for allaying inflammation was the following: one ounce each of the distilled waters of plantain, roses, and frog spawn, and a drachm of white vitriol, mixed; a few drops to be dropped into the eyes twice a day. This is undoubtedly an excellent cooling eye-water. There are other kinds of eye-water, given in the latter part of this work, which are all excellent in their place, of which the practitioner must judge. For a common topical inflammation of the eyes, I have used with good success as an external application, a decoction of witch-hazle bark with the addition of a tenth of the quantity of "balsam of life," and a few grains of white vitriol.

After the inflammation has gone off, if the eyes still remain weak and tender, they may be bathed every night and morning with cold water. All irritating applications are to be avoided. Lime water, or urine, is a very good wash for the eyes. If the sight is weak and daily impairing, a drachm of alum beat up with the white of an egg, after the curd is strained out, the water may be used for a strengthening eye water.

It will be proper frequently to look into the eyes, to see if any hairs be turned inwards; if so, they should be plucked out.

When blood has settled under or about the eyes, from a blow, or bruise, the speediest and most effectual method of removing it, is by applying warm fresh killed flesh over it, and as often as it becomes tainted with fever, or gets cold, let it be changed for a fresh piece, repeating it till the whole blood-shot appearance is gone. This can generally be done in the course of a night, or twelve hours; leaving the parts of their natural color. This application extracts the fever, communicates warmth to the parts, and creates

an action, by which the coagulated blood is absorbed, and free circulation restored.

Warm flesh applied in the same manner to the testicles, for blood-shot eyes, will have the same effect. This might appear singular, did we not know that there is an intimate connexion and sympathy between the eyes and genital organs.

COLDS AND COUGHS.

Colds are the effect of an obstructed perspiration. Every cold is a kind of fever, differing only in degree from some of those that have already been treated of. It is impossible, with the greatest circumspection, to defend ourselves at all times against colds. If the human body, and the àtmospheric air, could be kept constantly of an uniform temperature, catching cold would be impossible; but as both are subject to sudden changes, the perspiration must also be liable to many changes, and checks.

When oppression of the breast, a stuffing of the nose, unusual weariness, pain in the head, &c. give ground to believe that the person has caught cold, he ought immediately to lesson his diet, at least, the usual quantity of solid food, and abstain from all strong liquors. The patient ought to get into bed, and drink warm teas, till a sweat is created. His drink may be buttermilk, boiled, wine-whey, balm, hoarhound, boneset, pennyroyal teas, &c. A cold is easily cured if people will only confine themselves, and make a business of it; every one knows how to cure a cold, if he will only apply himself to it. But they are often neglected, and suffered to run, till by repeated additions, the patient finds himself on the broad road to consumption before he is aware of any thing serious.

Cough.—A cough is generally the effect of a cold. It consists in a convulsive motion of the diaphragm, generally owing to an irritation of the windpipe. When the cough is obstinate there is always reason to fear the consequences, as this shows a weak state of the lungs, and is often the forerunner of consumption.

When a cough comes from a cold, a table spoonful of Indian turnip, pulverised, and mixed in half a tea cup of honey, and a tea spoonful taken four or five times a day, will generally cure in two or three days. Or, the green Indian turnip, one part, and green comfrey, three parts, both bruised very fine into a jelly, and mixed, and a proper quantity of honey or sugar added, may be used. This will rarely fail

In a cough, diaphoretics, oils, and mucilages, stimulants and expectorants, and sometimes opiates, are proper. The practitioner can select from among these classes, enough that are suitable without having an enumeration of them here, which would occupy too much space. Many good preparations will be found among the recipes, from which he can select.

In obstinate coughs proceeding from a flux of humors upon the lungs, it will be necessary, besides expectorating medicines, to have recourse to cleansing and strengthening medicines. Balsam of life, is very appropriate; as also balm of gilead buds; or balsam copaiva,

twenty drops twice a day, on sugar. Nettle seeds mixed with honey, is no despicable remedy; the size of a nutmeg to be taken night and morning. Or, two ounces of garlic infused in a bottle of Madeira wine, a glass full night and morning. These are all good.

Preparations may also be made from skunk cabbage, elecampane, hoarhound, boneset, burdock, spikenard, pleurisy root, blood root, sumac, Indian hemp, lobelia, slippery elm, liquorice, flax-seed, &c.

A plaster of Burgundy pitch, about the size of a nutmeg, spread on a soft piece of leather the size of the hand, and laid between the shoulder-blades, will wonderfully relieve a cough: it may be taken off and wiped every three or four days, and ought to be renewed once a fortnight. This is indeed a cheap and simple medicine, and apt to be despised; but we will venture to affirm that the whole *materia medica* does not afford an application more efficacious in every kind of cough. This plaster draws off the humors, as may be known by the continual itching it occasions.

Hoarseness is caused by the great effusion of acrid lymph upon the windpipe and organs of speech, so as to obstruct the passage of the air in the formation of the sound. This is only a degree of cough, and requires nearly the same treatment. Skunk cabbage root, or ball, pulverised and mixed with honey, a tea spoonful four or five times a day, is excellent; or wheat bran, boiled with raisins; or, sweet oil, half an ounce at a dose; or, half a pint of new milk, with a gill of sweet oil, warmed and drank; or, half a pint of vinegar and water, with a quarter of a pound of butter dissolved in it, and drank on going to bed, are all very good.

When a cough is a symptom of some other malady, it is vain to attempt to remove it, without first curing the disease from whence it proceeds. Thus, it sometimes proceeds from foulness and debility of the stomach, requiring cleansing and strengthening of that organ, by gentle emetics and bitter purgatives, together with alkalies.

The Stomach cough may be distinguished from a lung cough by this: that, in the latter, the patient coughs where he draws in his breath; but in the former, that does not happen. Tonics and bitters are also proper in this species of cough.

When a cough and raising of matter proceeds from an ulceration of the lungs, or from any collection or concentration of matter or humors in the chest, it must not be checked till the *cause* is first removed. This cough is as necessary as the pump of a ship is to throw out the bilge water that collects in the hold. The only proper way to alleviate this, is to use means to *prevent the collection* of this matter in the chest, by restoring the general health and tone of the system. When this is done, the cough dies of its own accord.

Women, during the last stage of pregnancy, are often greatly afflicted with a cough, which is generally relieved by keeping the body gently open. A cough is often a symptom or forerunner of other diseases, as the gout, measles, &c.

WHOOPING COUGH.

This cough seldom affects adults, but often proves fatal to children. This cough is convulsive, and is named from its peculiar whoop-like sound. It is infectious.

Whatever hurts the digestion, obstructs the perspiration, or relaxes the solids, disposes to this disease; consequently, its cure must depend upon cleansing and strengthening the stomach, bracing the solids, and at the same time, promoting perspiration and the different secretions.

The diet must be light, as chicken broth, and light spoon meats, panada, &c. The drink may be hyssop, or pennyroyal tea, sweetened with honey or sugar candy, small wine whey, or, if the patient be weak, he may sometimes be allowed a little wine and loaf sugar.

One of the most effectual remedies in the whooping cough is change of air. When the disease proves violent, and the patient is in danger of being suffocated by the cough, he ought to take warm, loosening emetics, as the lobelia, or blood root. These may be repeated if necessary. If the breathing is much choked, five or six drops of rattle-snake's oil on sugar, may be given, to loosen the phlegm. Emetics not only cleanse the stomach, which in this disease is generally loaded with tough phlegm, but they likewise promote the perspiration and other secretions, and ought therefore to be repeated according to the obstinacy of the disease. They should not, however, be strong; gentle vomits, frequently repeated, are both less dangerous, and more beneficial, than strong ones. After vomiting, alkalies may be given.

The body ought to be kept gently open. For this purpose, rhubarb in some of its preparations, or senna, &c., may be given.

Stimulating or anodyne applications frequently afford relief, and may be rubbed along the spine, breast bone, or lower region of the stomach. Young children should be laid with their heads and shoulders raised, and be raised up when they cough, to guard against suffocation. The feet should be frequently bathed in lukewarm water, and a Burgundy pitch plaster kept constantly between the shoulders. When the disease proves very violent, it will be necessary, instead of it, to apply a blistering plaster.

On recovery, when the disease has been protracted and weakening, tonics, and antispasmodics may be administered.

HICCOUGH, OR HICCUP.

The hiccup is a convulsive motion of the stomach and midriff.

THE CAUSE.—Acrid, irritating matter in the stomach, a morbid sensibility from disease, drunkenness, too great fulness, or the contrary. The diaphragm is affected by sympathy.

THE PROGNOSTICS.—Sneezing generally removes it; or a sud-

den fright, or fixing the eyes intensely on some object; or any thing that attracts the mind from it. Proceeding from wounds, profuse evacuations, in asthmas, or at the close of a malignant fever, it is always a dangerous, and often a deadly symptom.

Essence of peppermint on sugar will often relieve; alkalies, as sal æratus, with rhubarb; the cleavers infusion, cools and allays it. Anti-spasmodics, as valerian, lady slipper, castor, musk, &c., are proper. Emetics and cathartics are sometimes indicated, if the stomach is foul.

PULMONARY CONSUMPTION.

A consumption is a wasting or decay of the whole body from an ulcer, or tubercles in the lungs, an empyema, or a nervous decay of the whole system.

At the present day, consumptions, or *reputed* consumptions, make up about one fifth of the bills of mortality in the principal cities of the United States. In the country, it, perhaps, falls a little short of that proportion. One hundred years ago, they formed less than one tenth.

Young persons, between the age of fifteen and thirty, of a slender make, long neck, high shoulders and flat breasts, are most liable to this disease.

Causes.—It has already been observed, that an inflammation of the breast often ends in an imposthume of the lungs.

Other diseases, by vitiating the habits, may likewise occasion consumptions; as the scurvy, the scrofula, or king's evil, the venereal disease, the asthma, small pox, measles, &c.

Consumption may also proceed from an originally small size and limited capacity of the lungs, or from tightness of the chest, whereby a sufficiency of vital heat is not generated for its free diffusion throughout the system. In consequence, cold and decay follow.—From this cause, consumption may be hereditary.

This disease, when really seated, is seldom or never cured. We shall endeavor, therefore, the more particularly to point out its causes, in order that it may be avoided. They are:

Confined or unwholesome air: when this fluid is impregnated with the fumes of metals, or minerals, it proves extremely hurtful to the lungs, and often corrodes the tender vessels of that necessary organ.

Violent passions, exertions, or affections of the mind, as grief, disappointment, anxiety, or close application to the study of abstruse arts or sciences.

Great evacuations, as sweating, diarrhœas, diabetes, excessive venery, the fluor albus, over discharge of the menstrual flux, giving suck too long, &c.

The sudden stoppage of customary evacuations; as bleeding piles, sweating of the feet, bleeding at the nose, the menses, issues, ulcers, or eruptions of any kind.

Making a sudden transition from a hot to a cold climate, change of apparel, or whatever greatly lessens perspiration.

Frequent and excessive debaucheries. Late watching and drink-

ing strong liquors, which generally go together, can hardly fail to destroy the lungs.

Consumptions are likewise caught by sleeping with the diseased; for which reason, this should be carefully avoided.

Those artificers who sit much, and are constantly leaning forward, or pressing on the stomach and breast, as cutlers, tailors, shoemakers, seamstresses, &c., often die of consumptions. They likewise prove fatal to singers, and all who have occasion to make frequent and violent exertions of the lungs.

More consumptive patients date the beginning of their disorders from wet feet, damp beds, night air, wet clothes, or catching cold after the body has been heated, than from all other causes.

We shall only add, that this disease is often owing to an hereditary taint, or a scrofulous habit; in which case, it is generally incurable.

Consumptions are also frequently produced, of late years, by the lavish use which is made of mercury; and of quinine, adulterated with arsenic.

Symptoms.—This disease generally begins with a dry cough, which often continues for some months. If a disposition to vomit after eating be excited by it, there is still greater reason to fear an approaching consumption. The patient complains of a more than usual degree of heat, a pain or oppression of the breast, especially after motion; his spittle is of a saltish taste, and sometimes mixed with blood. He is apt to be sad; his appetite is bad, and his thirst is great.—There is generally a quick, soft, small pulse; though sometimes the pulse is pretty full and rather hard. These are the common symptoms of a beginning consumption.

Afterwards the patient begins to spit a greenish, white or bloody matter. His body is extenuated by the hectic fever and clammy sweats, which mutually succeed each other. A looseness, and an excessive discharge of urine are often troublesome symptoms at this time, and greatly weaken the patient. There is a burning heat in the palms of the hands, and the face generally flushes after eating; the fingers become remarkably small, the nails are bent inward, and the hair falls off.

At last the swelling of the feet and legs, the total loss of strength, the sinking of the eyes, the difficulty of swallowing, and the coldness of the extremities, show the immediate approach of death, which, however, the patient seldom believes to be so near. Such is the usual progress of this fatal disease, which if not early checked, commonly sets all medicine at defiance.

Regimen.—On the first appearance of a consumption, if the patient live in a large town, or any place where the air is confined, he ought immediately to quit it, and make choice of a situation in the country, where the air is pure and free. Here he must not remain inactive, but take every day as much exercise as he can bear.

The best method of taking exercise, is to ride on horseback, as this gives the body a great deal of motion without much fatigue.—Such as cannot bear this kind of exercise, must make use of a car-

riage. The patient ought always to finish his ride in the morning, or at least before dinner; otherwise it will oftener do harm than good.

Those who have strength and courage to undertake a pretty long sea voyage, may expect great advantage from it. This, to my knowledge, has frequently cured a consumption, after the patient was, to all appearance, far advanced in that disease, and where medicine had proved ineffectual. Hence, it is reasonable to conclude, that if a voyage were undertaken in time, it would seldom fail to perform a cure.

Such as try this method of cure, ought to carry as much fresh provisions along with them, as will serve for the whole time they are at sea. As milk cannot be usually obtained at sea, fruits, chicken broth, &c., may be substituted. It is scarcely necessary to add, that such voyages should be undertaken, if possible, in the mildest season, and towards a warmer climate. Those who have not courage for a long voyage, may travel into a more southern climate, and if they find the air agrees with them, they should continue there, at least till their health be confirmed.

Next to proper air and exercise, we would recommend a due attention to diet. The patient should eat solid, nourishing food, of easy digestion, and his drink of a soft and cooling nature. All the diet ought to be calculated to lessen the acrimony of the humors, and to nourish and support the patient. For this purpose, milk is excellent. Asses' milk is commonly reckoned preferable to any other. To produce beneficial effects, it ought to make a considerable part of the patient's diet, and be persisted in some time. It should be drank, if possible, in its natural warmth, and by a grown person, in the quantity of a half a pint at a time, and three or four times a day.

But as asses' milk is difficult to be obtained in this country, other milk may be substituted. Cow's milk is most readily obtained, but is not so digestible as most other milk. If it should prove heavy on the stomach, a small quantity of brandy, or rum, with a little sugar, may be added, which will render it both light and nourishing.

Some extraordinary cures have been performed by women's milk. Could this be obtained in sufficient quantity, it would undoubtedly be preferable to any other.

Some prefer buttermilk to any other, and it is indeed a very valuable medicine, if the stomach can bear it. It does not agree with every person at first; and it is therefore often laid aside without sufficient trial. It should at first be taken sparingly, and the quantity gradually increased until it becomes almost the sole food. I never knew it succeed unless where the patient almost lived upon it.

We do not, however, advise those who have been accustomed to animal food and strong liquors, to leave them off all at once. This might be dangerous. It will be necessary for such to eat a little once a day, of the flesh of some young animal, or rather to use the broth made of chickens, veal, lamb, or such like. They ought also to drink a little wine diluted with twice or thrice its quantity of water, and make it gradually weaker till they can leave it off altogether.

These must be used only as preparatives to a diet consisting chiefly of shell fish, of milk, and vegetables, which the sooner the patient

can be brought to bear the better. Rice and milk, or barley and milk, boiled with a little sugar, is very proper food. Ripe fruits, roasted, baked, or boiled, are likewise proper.

Wholesome air, proper exercise, and a diet consisting chiefly of these and other vegetables, with milk, is the only course that can be depended on in a beginning consumption. If the patient has strength and sufficient resolution to persist in this course, he will seldom be disappointed of a cure.

In populous towns, where consumptions are very common, I have frequently seen consumptive patients, who had been sent into the country, with orders to ride, and live upon milk and vegetables, return in a few months quite plump, and free from any complaint. This, indeed, was not always the case, especially when the disease was hereditary, or far advanced; but it was the only method in which success was to be expected, and when it failed, medicine seldom succeeds.

If the patient's strength and spirits flag, he must be supported by strong broths, jellies, and such like. Some recommend shell fish in this disorder, and with some reason, as they are nourishing and restoratives. All the food and drink ought, however, to be taken in small quantities, lest an overcharge of fresh chyle should oppress the lungs, and too much accelerate the circulation of blood.

The patient's mind ought to be kept as easy and cheerful as possible. Consumptions are often occasioned, and always aggravated by a melancholy cast of mind; for which reason, music, cheerful company, and every thing that inspires mirth, are highly beneficial. The patient ought seldom to be left alone, as brooding over his calamities is sure to render him worse.

MEDICINE.—Though the cure of this disease depends chiefly upon regimen and the patient's own endeavors, yet I shall mention such things as I have found beneficial is assisting Nature to regain her wonted strength.

Expectoration may be promoted by the following medicines: a mixture of equal parts of lemon juice, fine honey and syrup of poppies. Four ounces of each of these may be simmered together in a pan over a gentle fire, and a table spoonful of it taken at any time when the cough is troublesome.

For warming and strengthening the blood, and keeping up a free circulation in the extremities, I make use of the *tonic tincture*. This wonderfully strengthens the patient, and raises his spirits. Also, the iron and myrrh pills, from four to six a day.

Acids seem to have peculiarly good effects in this disease; they both tend to quench the patient's thirst, and cool the blood. The vegetable acids, as apples, oranges, lemons, and elixir vitriol, appear to be most proper. I have known patients suck the juice of several lemons every day with manifest advantage, and would for this reason recommend acid vegetables to be taken in as great quantity as the stomach will bear.

For the patient's drink, we would recommend demulcent drinks; infusions of bitter plants, as centaury, camomile flowers, or water trefoil. These infusions may be drank at pleasure. They strengthen

the stomach, promote digestion, and at the same time answer all the purposes of dilution, and quench thirst much better than things that are sweet and luscious. But if the patient spit blood, he ought to use such drinks as are healing, and if occasion requires, astringents.—For this last purpose, the herb sweet bugle, in decoction, is of superior efficacy.

There are many other mucilaginous plants and seeds, of a healing and agglutinating nature, from which decoctions or infusions may be prepared with the same intention; as comfrey, quince seed, coltsfoot, linseed, sarsaparilla, &c. It is not necessary to mention the different ways in which these may be prepared. Simple infusion or boiling is all that is necessary, and the dose may be at discretion.

The confection of roses is here peculiarly proper. It may either be put into the decoction above prescribed, or eaten by itself. No benefit is to be expected from trifling doses of this medicine. I never knew it of any service, unless when three or four ounces at least were used daily for a considerable time. In this way I have seen it produce very happy effects, and would recommend it wherever there is a discharge of blood from the lungs.

When a disposition to consumption arises in consequence of any enfeebling evacuation, such as a considerable abscess, fluor albus, or the like, without any inflammation of the lungs having yet taken place, tonics will be serviceable. After inflammation has come on, or ulceration has commenced, it would not fail to prove injurious, by increasing the cough, with the tightness at the chest and oppressive breathing.

As detergents, balsamics of different kinds have been much used in the ulcerated stage. Balsam of fir, or the composition "balsam of life" may be tried. Myrrh, however, is the medicine employed with the greatest success in those cases of hectic fever, which are unattended with any great degree of heat or thirst, and which do not show manifest signs of inflammation. If at any time it should be thought too heating, the spiritous water may be omitted, as the solution may be made without it; although it is doubted whether it will agree so well with the stomach in general. A proper dose (10 to 15 drops) of the tincture of foxglove, may be added to each of the draughts, and be given together.

If the tubercles should discharge themselves into the cavity of the breast, between the pleura and the lungs, there is no way of getting the matter out but by an incision, as has already been observed. This operation must always be performed by a surgeon. We shall only add that it is not so dreadful as people are apt to imagine, and that it is the only chance the patient has for his life.

With regard to the remedies usually employed in the treatment of consumption, foxglove, with the sulphate of iron, myrrh, and other tonics, may be most proper in those cases which arise from scrofula. Much benefit may be derived from fumigations with a mixture of tar and beeswax.

A nervous consumption or atrophy, is a wasting or decay of the whole body, without any considerable degree of fever, cough, or difficulty of breathing. It is attended with indigestion, weakness, want of appetite, &c.

Those who are of a fretful temper, who indulge in spirituous liquors, or who breathe unwholesome air, are most liable to this disease.

We would recommend, chiefly, for the cure of a nervous consumption, a light and nourishing diet, plenty of exercise in a free open air, and the use of such bitters as brace and strengthen the stomach; as gentian root, camomile, hoarhound, colombo, &c. These may be infused in water or wine, and a glass of it drank frequently.

It will greatly assist the digestion, and promote the cure of this disease, to take twice a day, twenty or thirty drops of the elixir of vitriol in a glass of wine or water. The chalybeate wine is likewise an excellent medicine in this case; it strengthens the solids, and powerfully assists Nature in the formation of good blood.

What is called a *symptomatic consumption*, cannot be cured without first removing the disease by which it is occasioned.

Thus, when a consumption proceeds from the scrofula, the scurvy, asthma, the venereal disease, &c., a due attention must be paid to the malady from whence it arises, and the regimen and medicine directed accordingly.

When *excessive evacuations* of any kind occasion a consumption, they must not only be restrained, but the patient's strength must be restored by gentle exercise, nourishing diet and generous cordials. Young and delicate mothers often fall into consumptions by giving suck too long. As soon as they perceive their strength and appetite begin to fail they ought immediately to wean the child, or provide another nurse, otherwise they cannot expect a cure.

Before we quit this subject, we would earnestly recommend it to all, as they wish to avoid consumptions, to take as much exercise without doors as they can, to avoid unwholesome air, and to study sobriety. Consumptions owe their present increase not a little to the fashion of sitting up late, eating hot suppers, and spending every evening over a bowl of punch or other strong liquors. These liquors, when too freely used, not only hurt the digestion and spoil the appetite, but heat and inflame the blood and set the whole constitution on fire.

In tracing the various causes of consumption, I entered into minute details, to put people more upon their guard, as the disease when deeply seated seldom admits of a cure. Such being the case, the utmost care should be exerted to avoid them. The best general caution I can give is to guard against catching cold, the fruitful mother of consumptions and of many other disorders: how this is to be done, will be more fully explained when I come to treat of colds and coughs, the bane of the young, gay, and thoughtless part of the community, who have no fear of any ill until it overtakes them, when it is generally too late to prevent the fatal consequences.

ASTHMA.

Asthma is a spasmodic disease of the lungs, coming on by paroxysms. Persons in the decline of life are most liable to it. It is distinguished into the moist and dry: the former is attended with expectoration, or spitting; but in the latter the patient seldom spits,

unless sometimes a little tough phlegm, by mere force of coughing. Asthma is either periodical or continual.

The cause of a continued asthma is a compression of the lungs by a serum or dropsy in the breast, empyema, corpulence, adhesion of the lungs to the pleura: in a word, by whatever compresses the lungs, impedes the circulation of the blood through them, or preveuts their being duly expanded by the air.

The cause of a periodical asthma is a compression of the vessels and air cells of the lungs, owing to slow fumes, or an acid gas, arising from fermentation in a foul stomach, and which impedes the course of the nervous influence into the lungs, leaving an insufficiency of vital heat to distend the vessels to their usual extent. This may come from a bad conformation of the chest, straitening the lungs too much; also exposure to cold easterly winds, sudden change of air, foggy weather, &c. The immediate cause of the asthma is a spasmodic constriction, or irritation of the organs of respiration.

Symptoms.—An asthma is known by a quick, labourious breathing, which is generally performed with a kind of wheezing noise. Sometimes the difficulty of breathing is so great that the patient is obliged to keep in an erect posture, night as well as day, otherwise he is in danger of being suffocated. A fit of the asthma generally comes on after exposure to cold, easterly winds, damps, fogs, wet feet, eating indigestible food, &c.

The paroxysm is commonly ushered in with listlessness, want of sleep, hoarseness, a cough, belching of wind, heaviness about the breast, and difficulty of breathing. To these succeed fever, heat, pain in the head, sickness, nausea, great oppression of the breast, palpitation of the heart, a weak, and sometimes intermitting pulse, an involuntary flow of tears, bilious vomitings, &c. All these symptoms grow worse towards night; the patient is easier when up than in bed, and is very desirous of cool air.

After some nights passed away in this manner, the fits at length moderate, and suffer more considerable remissions, particularly when they are attended with a copious expectoration in the mornings, and when this continues from time to time throughout the day; and the disease going off at last, the patient enjoys his usual rest by night without further disturbance. In some severe cases, the patient is obliged to abstain from sleeping on a bed altogether.

Regimen.—The food ought to be easy of digestion, solid, and nourishing—all windy things are to be avoided. The body should be kept warm, and particularly the feet, which should be kept dry, and perspiration promoted. Nothing is of so great importance in the asthma as pure and moderately warm air. Asthmatic people can seldom bear either the close, heavy air of a large town, or the sharp keen atmosphere of a bleak hilly country: a medium, therefore, between these is to be chosen.

Exercise is likewise of very great importance in the asthma, as it promotes the digestion, greatly assists in the preparation of the blood, and helps to prevent the accumulation of the serum in the chest. The blood of asthmatic persons is seldom duly pre-

pared, lacking oxygen, owing to the proper action of the lungs being impeded.

Medicine —During the paroxysm the body is generally bound; a purging clyster, with a solution of assafœtida, ought therefore to be administered, and if there be occasion, repeat it The patient's feet and legs ought to be immersed in warm water, and afterwards rubbed with a warm hand or dry cloth. If there be a violent spasm about the breast or stomach, warm fomentations, or bladders filled with warm milk and water, may be applied to the part affected, and warm cataplasms to the soles of the feet. The patient must drink freely of diluting liquors, and may take a tea spoonful of the tincture of castor and saffron mixed together in a cup of valerian tea, twice or thrice a day. Other anti-spasmodics, as foxglove, stramonium tincture, lady slipper, skunk-cabbage, &c, may be given. Vomits must not be neglected, as they often snatch the patient, as it were, from the jaws of death: among these, lobelia is peculiarly serviceable, cutting up the phlegm, and giving instant relief. Blood root is also good.

In the moist asthma, such things as promote expectoration ought to be used. Mucilaginous, anti-spasmodic, warming and stimulating medicines, are proper. Several excellent preparations for this purpose will be found among the recipes.

A combination of foxglove and opium has proved highly advantageous in spasmodic asthma, when given in the dose of half a grain of each every four or five hours. In the moist asthma, wild turnip with foxglove might be more advisable.

For the convulsive or nervous asthma, anti-spasmodics and tonics are the most proper medicines. The green drops, in lime water, in proportion of a wine glass to a bottle, and a table spoonful taken three times a day, will rarely fail to relieve. Bitter infusions, and preparations of iron, (without acid;) in short, every thing that braces the nerves or takes off the spasm, may be of use in a nervous asthma. The skunk cabbage is very appropriate to this disease.

In addition to other tonics, exercise, either in swinging, sailing, riding in a carriage, or on horseback, but particularly the latter, together with a change of air, will be beneficial to asthmatics.

In the asthma, arising from a retrocession of the gout, there are usually intermission, and other irregularities of the pulse, great anxiety of countenance, with a bluish tinge thereon, large doses of saffron, opium, camphor, or *fever root*, are the medicines most likely to afford relief. Sometimes it is necessary to apply a blister to the chest, assisted with placing the feet in warm water, &c. A very strong infusion of roasted coffee is said to give ease in an asthmatic paroxysm.

The following tincture I can recommend as excellent for the asthma:—Take half a pound of quick lime, slack it by turning on two quarts of hot water, and while it is slacking and boiling stir in two spoonsful of tar, and stir them well together, and let it stand and settle. Take half a pound of wild turnip, half a pound of milk weed roots, fresh, and a small handful of lobelia; bruise them and infuse in two quarts of wine; place the whole in a sand heat twenty-four hours, then

press and strain, and add to it the lime water, and bottle it for use. Dose, a wine glass three times a day. This is also good in coughs, consumptions, hysterics, cramps, spasms, &c.

APOPLEXY.

An apoplexy is a sudden abolition of the external and internal senses, and of all voluntary motion, with sometimes a full pulse and large respiration. Though this disease proves often fatal, yet it may sometimes be removed by proper care. It chiefly attacks sedentary persons of a gross habit, who use rich and plentiful diet, and indulge in strong liquors. People in the decline of life are most subject to apoplexy.

Causes.—The immediate cause of an apoplexy, is a compression of the brain, occasioned by an excess of blood, or a collection of watery humors. The former is called a *sanguine*, and the latter a *serous* apoplexy. It may be occasioned by any thing that increases the circulation towards the brain, or prevents the return of the blood from the head: as intense study, violent passions, wearing any thing too tight about the neck; a rich and luxurious diet; suppression of urine, suffering the body to cool suddenly after having been greatly heated; excessive use of spiceries, or high seasoned food; excess of venery; the sudden striking in of any eruption, or the stoppage of any customary evacuation; bruises on the head, &c.

Among the pre-disposing causes may be reckoned, a large head, thick neck, corpulence, spasmodic contractions of the vessels, bony protuberances within the skull, frequent drunkenness, extravasated blood, mercurial vapors, &c.

Symptoms.—The usual forerunners of an apoplexy are, giddiness, pain, and swimming of the head; loss of memory, drowsiness, noise in the ears, night-mare, tears, and laborious breathing. These symptoms denote an approaching fit, which should be averted, if possible, by bleeding, and opening medicines.

In the sanguine apoplexy, if the patient does not die suddenly, the countenance appears florid, the face is swelled and puffed up, and the blood-vessels about the neck and temples are swollen; the pulse beats strong; the eyes are prominent and fixed; snorings; involuntary evacuation of the excrements, or urine.

Prognostics.—When breathing totally ceases for some time it is always fatal. If the pulse is weak, respiration difficult, the patient old, or has been seized before in the same manner, loud snoring, cold sweats, frothing at the mouth, these are all symptoms of a fatal tendency. An apoplexy often terminates in a palsy. A strong pulse is a sign of recovery; if succeeding blood-letting, the patient will undoubtedly do well.

In this species of apoplexy, every method must be taken to lessen the force of the circulation towards the head. The patient should be kept perfectly easy and cool; his head raised pretty high, and his

feet suffered to hang down. His clothes ought to be loosened, particularly about his neck : and his garters tied pretty tight, by which means the motion of the blood from the lower extremities may be retarded. As soon as the patient is placed in a proper posture, he should be bled freely in the neck or arm. Hippocrates, with great justice asserts, that blood-letting always kills or cures in an apoplexy ; the reason is evident, because it is almost always owing to too little blood, causing an unequal circulation. When plethoric, only, therefore, we should bleed.

The proper medicines to be used are sneezing snuffs; laxative clysters, with a large spoonful of common salt in it ; emetics, as lobelia, which is very relaxing ; as also the *fever powders* ; blistering plasters between the shoulders and to the calves of the legs ; purgatives ; cooling applications to the head, as the "anodyne wash," and warm fomentations to the feet and legs. As soon as the patient is able to swallow, he should drink freely of some diluting liquor, as penny-royal, &c.

In the *serous apoplexy*, the symptoms are nearly the same, only the pulse is not so strong, the countenance is less florid, and the breathing easier :—Bleeding is seldom proper here ; and it is too generally performed in fits of all sorts, though there are very few instances in which they do not originate from a laxity of fibres and deficiency of blood. Those who are so busy with the lancet ought to be reminded that there is yet no repeal of the sixth commandment. Blistering plasters may be applied, and clysters given, as before directed. Vomits and purges are here likewise necessary, and the patient may drink strong balm tea, or brooklime, to produce relaxation and sweat. Tobacco smoke, or sneezing powders, may be blown up the nose. The patient should be rubbed with warm flannel, or bathed with spirits. A plentiful perspiration kept up for a considerable time, has often carried off a serous apoplexy. The clysters may be tinctured with tobacco.

Out of the fit, stimulating and nervous medicines will be proper, to quicken the action of the blood, and throw off the superabundance of serum ; such as valerian, ginger, pleurisy root, angelica, galangal, &c. Also, occasionally a purgative.

Persons of a plethoric or apoplectic make, or those who have been attacked by it, ought to use a very spare and slender diet, avoiding all strong liquors, spiceries, and high-seasoned food. They ought likewise to guard against all violent passions, and avoid the extremes of heat, and cold. The hair should be cut close, and the head bathed daily with the "anodyne wash," or cold water. The feet should be kept warm, and never suffered to continue long wet. The body must be kept open by laxative food, or clysters. Apoplectic persons ought never to go to rest with a full stomach, or lie with their heads low, or wear any thing too tight about their necks. When a lethargic disposition prevails, medicines that quicken the action of the blood, and dilute it, should be used.

EPILEPSY, OR FALLING SICKNESS.

The *Epilepsy*, is a sudden deprivation of all the senses, wherein the patient falls suddenly down, and is affected with violent convulsive motions. Children, especially those who are delicately brought up, are most subject to it. It more frequently attacks ment han women. When it attacks children there is reason to hope it may go off about the time of puberty. When it attacks any person after the age of twenty, the cure is more difficult; if the fit continues long, and returns often, the prospect is bad, as also when the patient is seized with fits in his sleep.

It is often symptomatic, arising from acidity of the stomach, worms, teething. &c.

Causes.—It is sometimes hereditary, proceeding from a bad shape of the skull. It may likewise proceed from blows, bruises, or wounds on the head: a collection of water, blood, or serous humors in the brain; a polypus, tumors, or concretions within the skull; excessive drinking; intense study; excess of venery; worms; teethings; suppression of customary evacuations; too great emptiness or repletion; violent passions or affections of the mind, as fear, joy, &c.; all vehement affections of the nervous system; acrid gas, &c.

Symptoms.—An epileptic fit is generally preceded by unusual weariness, pain in the head, dulness, giddiness, noise in the ears, dimness of sight, palpitation of the heart, disturbed sleep, difficulty of breathing, the bowels are inflated with wind, the urine is in great quantity, but thin; the complexion pale, the extremities cold, and the patient often feels, as it were, a stream of cold air ascending to the head.

In the fit, the patient makes an unusual noise; his thumbs, are drawn in towards the palms of his hands, his eyes are distorted, he froths at the mouth, his extremities are bent or twisted various ways, he starts, foams, often discharges his seed, urine, and fœces involuntarily, and is quite destitute of all sense and reason. On recovery, no remembrance of what has passed; stupor; impaired intellects.

Prognostics.—If hereditary, and a delirium takes place after the fit,s it is incurable. From the frequency of the fits arise loss of memory, dulness, foolishness, palsy, apoplexy, and death itself. Involuntary emission, the fits of long duration, and the brain primarily affected, are signs that the cure is difficult. If the cause is in the solids, it is irremoveable. If owing to worms, or spasms, proper treatment will cure.

The Cure.—In the fit, let a loud noise be made in the ear, and apply hartshorn to the nose, or blow up the nostrils a little black pepper, or bayberry bark pulverized. Put a spoonful of common salt in the mouth: this alone has often broke the fit. Bathe the wrists and temples with vinegar. If the mouth can be opened, put

into it fifteen or twenty drops of oil of amber; or a little castor, or musk tincture, peppermint water. Also, as soon as can be taken, give foxglove, or stramonium tincture, or the high cranberry, or cramp, bark, in tincture.

As I never saw a plethoric epileptic in my life, I never used the lancet for any one, nor can I think it allowable. When the disease is occasioned by the stoppage of customary evacuations, these, if possible must be restored, or the humors purified, or a seton substituted. When there is reason to believe that the disease proceeds from worms, proper medicines must be used to kill these vermin. If from teething, keep the body open with clysters, and bathe the feet frequently in warm water, and if the fits are obstinate, put a blister between the shoulders. The same method is to be followed when the epilepsy proceeds from the small pox, measles, &c.

When it is owing to a debility and insufficiency of blood, too great an irritability of the nervous system, such medicines as brace and strengthen the nerves may be used: as the *tonic tincture*, valerian, or lady slipper, with colombo, gentian, unicorn root, angelica, ginger balm of gilead, myrrh, white wood bark, elecampane, &c. Spirits of turpentine, in a large dose, as an ounce, in milk, for a man, has been highly recommended.

In some of the worst cases, in which the fits were long and violent, as well as frequent in the course of the day, electricity has been found to weaken them, and reduce their number very materially in a short space of time.

Vomits are of great efficacy in many cases of epilepsy, and can rarely be given amiss. Alkalies are sometimes required.

INFLAMMATION OF THE STOMACH.

This disease is divided into two species, the phlegmonous, or boil like, and the erysipelatous: the former will here be treated of; as the latter arises, for the most part, towards the termination of other diseases, marking the certain approach of dissolution, and unaccompanied by any burning pain in the stomach.

Inflammations of the stomach are dangerous, and require the most speedy assistance, as they frequently end in suppuration, and sometimes mortification, which is certain death.

Causes.—This disease may proceed from any of the causes which produce an inflammatory fever. It may likewise proceed from the acrimony of bile, or from acrid and stimulating substances taken into the stomach; as strong vomits or purges, corrosive poisons, and such like. A striking in of the gout may also occasion it, particularly when driven from the extremities by cold applications.

Symptoms.—Fixed pain and burning heat in the stomach; great restlessness and anxiety; a small, quick and hard pulse; vomiting, or nausea; excessive thirst; difficulty of breathing; coldness of the extremities: cold clammy sweats; and sometimes convulsions and fainting fits. The stomach is swelled and often feels hard o the

touch. One of the most certain signs of this disease is the sense of pain which the patient feels upon taking any kind of food or drink, especially if it be either too hot or cold.

When the patient vomits every thing he eats or drinks, is extremely restless, has a hiccup, with an intermitting pulse, and frequent fainting fits, the danger is very great.

CURE.—All acrimonious or heating things are to be avoided; as also, wines, spirits, &c. The inclination to vomit may induce the attendant to suppose a vomit necessary; but it is almost certain death. The food and drink should be light gruel, simple toast water, and such like; clear whey, barley water, or decoctions of emollient, mucilaginous vegetables, as comfrey, slippery elm, linseed, liquorice, marsh-mallows, sarsaparilla, &c.

Let the "anodyne wash" be freely applied over the region of the stomach, and cloths wet with it and laid on. This must not be neglected.

For a medical drink, the cold infusion of clivers is second to none. Let it be drank freely. Bleeding may sometimes be beneficial. Mild clysters may be given. The feet and legs ought frequently to be bathed in warm water, and hot bricks, or poultices applied to the soles of the feet. The warm bath will be of service.

In this and all other inflammations of the bowels, a large blister, applied over the part affected, is one of our best remedies.

INFLAMMATION OF THE INTESTINES.

This, like inflammation of the stomach, is of two species. It proceeds from the same cause, and is equally dangerous. It may likewise proceed from costiveness, worms, unripe fruits, stale beer, or sour wine; or from a rupture or schirrus of the intestines, or the growing together of the sides.

The *symptoms* here are nearly the same as in the foregoing disease, only the pain, if possible, is more acute, and situated lower in the abdomen. The vomiting is likewise more violent, and sometimes even the excrements and clysters are discharged by the mouth. The patient is continually belching up wind, and his urine is obstructed.

While the pain shifts, and the vomiting only at certain intervals, and while the clysters pass downwards, there is ground for hope; but when the clysters and fœces are vomited, the patient weak, with a low fluttering pulse, pale countenance, disagreeable stinking breath, there is great reason to fear a dissolution. Clammy sweats, black fœtid stools, with a small intermitting pulse, and total cessation of pain, are signs that a mortification has already begun.

REGIMEN—the same as directed in inflammation of the stomach.

THE CURE.—Bleeding will generally be beneficial. The "anodyne wash" should be freely applied over the bowels, cold; and if necessary, apply a large blister over the part affected. Warm fomen-

tations and poultices should be applied to the legs and feet; laxative and emollient clysters, as barley-water, or gruel with salt, and softened with sweet oil or fresh butter; these may be administered every two or three hours, or oftener, if the patient continues costive.

If the inflammation is severe, and mortification is endangered, a clyster of yeast, with half an ounce of laudanum in it, may be administered, and other antiseptics.

Acids have a very good effect in staying vomiting: the patient's drink may therefore be sharpened with lemon juice, elixir vitriol, &c. Mucilaginous substances may be taken, as comfrey, or slippery elm jelly.

If a stool cannot be procured by injection, it will be necessary to immerse the patient in warm water up to the breast. This often succeeds when other means fail. The patient must continue in the water as long as he can easily bear it without fainting, and if one immersion is not sufficient, it may be repeated as soon as the patient's strength and spirits are recruited. It is safer to go frequently into the bath, than to continue too long at a time.

It has sometimes happened, after all other means of procuring a stool have been tried to no purpose, this was brought about by immersing the patient's extremities in cold water, or dashing his legs with cold water. This method, when others fail, may deserve a trial.

In desperate cases of obstruction to the passage through the bowels, it is common to give quicksilver, or duck shot. They may either of them be given in quantity of from one to two ounces. When there is reason to fear mortification of the intestines, this ought not to be tried: in that case it cannot ease the patient, but only hasten his death. But when the obstruction is occasioned by any cause that can be removed by force, as hard dry feces, these are not only proper remedies, but the only substances that can make their way through the intestinal canal.

When there is little inflammation, and clysters do not produce a passage, mild purgatives, as castor oil, senna, &c. may be used.

The *Iliac Passion*, which is generally confounded with inflammation of the intestines, consists in an inversion of the worm-like downward motion of the guts; consequently nothing can pass downwards. It is caused by the receiving of an upper part of an intestine into a lower, or the contrary, twisting of the guts, &c.

The treatment necessary is the same as in the above disorder; only large injections of yeast are particularly necessary; clysters of tobacco smoke are also of great service.

If the inflammation proceeds from a hernial rupture, that must be reduced before relief can be obtained.

COLIC.

The colic has a great resemblance to the two preceding diseases, both in its symptoms, and method of cure. It is generally attended with costiveness and acute pain in the bowels; and requires diluting diet, evacuations of the stomach and bowels, fomentations, &c.

Colics are variously named, according to their causes, as the *flatulent*, or *wind colic*, the *bilious*, the *hysteric*, and the *nervous*, &c.; (some of which, particularly the *flatulent*, have of late years been transformed by *new fashions* in physic, into an entire new disease, viz: "Liver complaint.") As each of these requires a particular method of treatment, we shall point out their most general symptoms with the means to be used for their relief.

The *flatulent*, or wind colic, is generally occasioned by the use of unripe fruits, indigestible and windy food, fermenting liquors, and such like. Delicate people, whose digestive powers are weak and the action of their bowels destroyed by harsh mineral medicines, are most liable to this kind of colic

The wind colic may either affect the stomach or intestines. It is attended with a painful stretching of the affected part, as though it were bound up. The patient feels a rumbling in the bowels, gulps up wind; the pain is sometimes moveable, shooting from side to side, or into various parts of the chest and abdomen, often catching the patient so suddenly and severely as nearly to stop his breath.

If there is reason to believe the stomach is clogged, an emetic, or purge should first be administered. If the bowels are closed, give clysters. If the pain is great in any particular part, apply the "anodyne wash." Put hot bricks, or other warm applications to the soles of of the feet.

In all cases of flatulency, give carminatives and such medicines as relax the system and open the pores: as a combination of pleurisy root, angelica and calamus, infused in spirits, and as much taken as can be drank; or which is an almost certain relief for wind, the pleurisy root alone, in powder, a tea spoonful every twenty minutes till relief is obtained. Any warm carminatives or aromatics, as mints, particularly peppermint, caraway, cloves, pepper, zanthoxylum, lobelia, &c. In addition to these, to relax the system and give ease, particularly in severe cases, give diluting and sweating drinks, with four or five doses of the *fever powders*, one every fifteen minutes in tea, till sufficient are taken. I have often found these to give immediate relief from the most excruciating agonies.

When the pain is removed, and the pores gently opened, and the bowels free, the cure of the colic is effected. But the debility of the stomach, which generally is the cause of the colic, should afterwards be remedied by such medicines as strengthen and invigorate the stomach and whole system. Persons who are liable to attacks of this colic should be particularly cautious against taking indigestible food into their stomachs, or overloading them. Goose flesh, boiled eggs, nuts, &c., or whatever they found to be heavy upon their stomachs, must be avoided.

A glass of good peppermint water or brandy, will often relieve the wind colic.

Bleeding is inadmissible, although it is very flattering by often giving immediate relief. The patient is generally already sufficiently feeble, and bleeding only renders a return most certain, and brings on a host of other diseases. The ill effects of bleeding have been very generally felt by people in this country, sufficiently, one would suppose, to prove a warning against it.

The *bilious colic* is attended with very acute pains about the region of the navel. The patient complains of great thirst, and is generally costive. He vomits a hot, bitter, and yellow-colored bile, which being discharged, seems to afford some relief, but is quickly followed by the same violent pain as before. The vomiting sometimes increases till it becomes almost continual, and the proper motion of the intestines so far inverted as to produce all the symptoms of an impending Iliac passion.

First, it is generally proper to give a vomit, as lobelia, to empty the stomach, and afterwards, if it will stay down, a smart purge, together with clysters of yeast, tinctured with lobelia, or tobacco; or injections of tobacco smoke; or, if it can be procured, new small beer, while it is foaming, should be plentifully injected, and also drank. These means should be persevered in till a downward passage is procured, and irritability and vomiting allayed.

Chicken broth, clear whey, or gruel, sharpened with acids, must be drank freely. Mint tea is a very good drink; toast water, tinctured with peppermint, is also good. After proper evacuations, the sal æratus and rhubarb may be given to destroy the acridity, and compose the stomach.

Fomentations, or the "anodyne wash," should also be applied to the region of the stomach.

The *hysteric colic* bears a great resemblance to the bilious. It is attended with acute pains about the region of the stomach, vomiting, &c. What the patient vomits in this case is commonly of a greenish color. There is a great sinking of the spirits, with dejection of mind and difficulty of breathing, which are the characteristic symptoms of this disorder. Sometimes it is accompanied with the jaundice, but this generally goes off of its own accord in a few days. It is not dangerous.

In this colic all evacuations, as bleeding, vomiting and purging, do hurt. Every thing that weakens, or sinks the spirits, is to be avoided. If, however, the vomiting should prove violent, warm water may be drank to cleanse the stomach. After the fit, give carminatives, as in flatulent colic, joined with anti-spasmodics, as valerian, lady slipper, castor, &c.

After the stomach is cleansed with warm water, fifteen, twenty, or twenty-five drops of laudanum, in a little cinnamon or peppermint-water should be given. Pennyroyal tea is a very suitable drink.

The *nervous colic* prevails among miners, smelters of lead, manufacturers of white lead, &c. "Painters' colic," is of the same character. No disease of the bowels is attended with more excruciating pain than this; nor is it soon at an end. It often continues eight or ten days with very little intermission, the body all the while continuing bound in spite of medicine, yet at length yield, and the patient recover. It generally, however, leaves the patient weak, and often ends in a palsy.

The general treatment of this disease is so nearly the same with that of the iliac passion, that it is not necessary to repeat it here. The body is to be kept opened by mild purgatives in small doses, and frequently repeated, and their operation must be assisted by soft oily clysters, fomentations, &c. Castor oil is reckoned peculiarly pro-

per in this disease: it may be both mixed with the clysters, and given by the mouth, in doses of one, two, and three table spoonsful.

The Barbadoes tar, is said to be an efficacious medicine in this disease. It may be taken to the quantity of two drachms three times a day, or oftener if the stomach will bear it. The back may be rubbed with strong spirits.

If the patient remains weak and languid after this disease, he must use exercise on horseback, and use tonics and stimulants.

To avoid this colic those who work in lead, should never go to their labor with an empty stomach and should never suffer themselves to be costive.

INFLAMMATION OF THE KIDNEYS.

The Kidneys are subject to two kinds of inflammation; one arising from the common causes of inflammation, the other from irritation from gravel. It is the former that is here noticed.

Cause.—It is occasioned by wounds or bruises of the kidneys; strong diuretic medicines, as spirits of turpentine, tincture of cantharides, &c; violent motion, as hard riding, or walking; or whatever drives the blood too forcibly into the kidneys. It may also proceed from spasms and obstructions produced by gravel.

Symptoms.—A sharp pain in the small of the back about the region of the kidneys, with some degree of fever, and a stupor or dull pain in the thigh of the affected side. The urine is at first clear, and afterwards of a reddish color; but in the worst kind of the disease it generally continues pale, is passed with difficulty, and in small quantities at a time. The patient feels great uneasiness when he endeavors to walk or sit upright. He lies with more ease on the affected side, and has generally a nausea or vomiting, resembling that which happens in the colic.

Cure.—Every thing of a heating or stimulating nature is to be avoided. The food must be thin and light, as small broths, panada, and the like. Emollient and thin liquors must be plentifully drank, as pumpkin seed tea, decoction of marsh-mallows, with barley, liquorice, whey, or balm tea. The patient notwithstanding the vomiting, must be constantly sipping small quantities of these or other diluting liquors.

Cloths dipped in the "anodyne wash," should be applied over the part affected and renewed as often as they grow dry. A fomentation of camomile flowers, with saffron and mallows, or wild indigo root, may also be applied to the region of the kidneys. Castor oil, with emollient clysters, ought frequently to be administered; and if the latter do not open the body, a little salt, or honey and senna, may be added to them.

To cool and allay the inflammation in the kidneys, as well as assist in removing the obstructions in the urinary passage, I depend mostly on the cleavers infusion. Let it be drank freely: The pump-

kin seed tea must not be omitted. These are particularly necessary if the inflammation is caused by gravel obstructing the kidneys or ureters. The foxglove, in small doses, is also a good medicine in this case. A few drops of laudanum may now and then be put in the patient's drink.

When the disease is protracted beyond the seventh or eighth day, and the patient complains of a stupor and heaviness of the part, has frequent returns of chilliness, shivering, &c., there is reason to suspect that matter is forming in the kidney, and that an abscess will ensue.

When matter in the urine shows that an ulcer is already formed in the kidney, the patient must be careful to abstain from acrid, sour and salted provisions; and to live chiefly upon mild mucilaginous herbs and fruits, together with broths of young animals, barley, pot-herbs, &c. His drink may be buttermilk, that is not sour: this is considered almost a specific for ulcers in the kidneys. It must be persevered in, however, for some time.

The *anti-mercurial syrup*, would greatly help to cleanse and heal the ulcerations in the kidneys; particularly as this ulceration often proceeds in a great measure from a vitiation of the fluids through the whole system.

INFLAMMATION OF THE BLADDER.

This inflammation proceeds, in a great measure, from the same causes as that of the kidneys. It is known by an acute pain and tension towards the bottom of the belly, and difficulty of passing urine, with some degree of fever, a constant inclination to go to stool, and a perpetual desire to make water, &c.

This disease must be treated on the same principle as the preceding. The diet must be light, thin, and of a cooling nature. The lower part of the belly should be bathed freely with the "anodyne wash," or fomented with camomile, hops, marsh-mallows, &c. If the spasm and obstruction is very obstinate, lay on a large poultice of bruised onions, slightly warmed, over the lower part of the belly; this quickly relaxes the parts. At the same time, the cleavers infusion must not be omitted; as well as the decoction or the oil of pumpkin seeds.

A stoppage of urine may proceed from other causes besides an inflammation of the bladder; as a swelling of the pile veins; hardened *fæces* lodged in the *rectum*; a stone in the bladder; a swelling of the womb; excresences of flesh in the urinary passage, a palsy of the bladder, hysteric affections, &c. Each of these requires a particular treatment, which does not fall under our present consideration. We shall only observe, that in all of them, mild and gentle applications are the safest, as strong diuretic medicines of a heating and irritating nature generally increase the danger.

INFLAMMATION OF THE LIVER.

The liver is less subject to inflammation than most of the other viscera, as in it the circulation is slower; but when inflammation does happen, it is with difficulty removed, and often ends in suppuration or schirrus. This disease is more common in warm climates.

I cannot approve of the prevalent fashion in physic, of christening almost every painful affection within the abdomen, a "Liver Complaint." It leads to a wrong treatment. For instance, many, to my knowledge, have been dosed with the *blue pill* for months, or undergone a mercurial salivation, for this "liver complaint;" when, as I believed, and as afterwards proved to be the case, their whole disease, aside from the destructive effects of the mineral, consisted in mere debility and *flatulency*. No wonder that under such treatment, these "liver complaints" prove *obstinate* and *incurable!* Nothing could be given more injurious. Thousands of females in this country, and I might even say, in this city, are now groaning under this relentless "liver complaint," and continually taking medicine for it, when their real disease is an inflammation, swelling, or bearing down of the womb. This I assert from experience.

Causes.—Besides the common causes of inflammation, we may add: excessive fatness, schirrus of the liver, violent shocks, any thing that suddenly cools the liver after being greatly heated, stones obstructing the course of the bile, strong wines, hot spicy aliment, long continued intermittent fevers, blows, and in five cases out of six, the partial application of cold or wet when the body is heated or over fatigued with exercise.

Symptoms.—This disease is known by a painful tension of the right side under the false ribs, attended with some degree of fever, a sense of weight, or fulness of the part, difficulty of breathing, loathing of food, great thirst, with a pale or yellowish color of the skin and eyes.

The symptoms here are various, according to the degree of inflammation, or the particular part affected. Sometimes the pain is so inconsiderable that an inflammation is not so much as suspected; but when it happens in the upper or convex part of the liver, the pain is more acute, the pulse quicker, and the patient often troubled with a dry cough, a hiccup, and a pain extending to the shoulder, with difficulty of lying on the left side.

This disease may be distinguished from the pleurisy by the pain being less violent and seated under the false ribs. It may also be distinguished from hysteric and hypochondriac disorders, by the fever with which it is accompanied. In warm climates the liver is more apt to be affected, as the secretion of bile is increased and it is liable to become acrid, thereby exciting irritation.

This disease is seldom mortal. A constant hiccupping, violent fever, and excessive thirst, are all bad symptoms. When a schirrus of the liver is formed, the patient, if he observes a proper regimen,

may nevertheless live a number of years tolerably easy: but if he indulge in animal food and strong liquors, or take medicines of an acrid or irritating nature, the schirrus will be converted into a cancer which will generally prove fatal.

CURE.—The same regimen is to be observed in this as in other inflammatory disorders. Cool diluting liquors must be drank freely. All violent purgatives are to be avoided; the body however, must be kept gently open. The side affected may be bathed with the "anodyne wash;" or fomentations of hops, wormwood, tansy, camomile, with vinegar, &c., may be applied. Mild laxative clysters may be frequently administered; and if the pain should, notwithstanding, continue violent, a blistering plaster may be applied over the side affected; or a seton may be inserted.

For cleansing, and for promoting the secretion of urine, the *dandelion* is very efficient. A pound of the green roots, bruised, and boiled to a quart, may be drank in quantity of a gill three times a day, and continued till well. The first doses may create curious or strange sensations, but these are not dangerous, and merely shew that it takes effect. It must be recollected, however, that this is applicable to a *real* affection of the liver only. Foxglove may also be given to promote the secretion of urine.

The *blue flag* may be combined with the dandelion very profitably, for an alterative to the system. I have also used the *anti-mercurial syrup* in these cases, with unvariable success.

When there is an inclination to sweat, it ought to be promoted, but not by warm sudorifics. The only thing to be used for that purpose, is plenty of diluting liquor, drank blood warm, or the *fever powders*.

If the stools be loose, or even streaked with blood, no means should be used to stop them, unless they be so frequent as to weaken the patient. Loose stools often prove salutary, and carry off the disease.

If an abscess is formed in the liver, methods should be tried to make it break and discharge outwardly, as fomentations, ripening poultices, &c. Sometimes, indeed, the matter of an abscess comes away in the urine, and sometimes it is discharged by stools; but these are efforts of nature which no means can promote. When the abscess bursts into the cavity of the *abdomen* at large, death must ensue; nor will the event be more favorable, when the abscess is opened by an incision, unless in cases, where the liver adheres to the lining membrane, so as to form a bag for the matter, to prevent its falling into the belly; in which case, opening the abscess by a sufficiently large incision, will probably save the patient's life.

CHOLERA MORBUS.

The *cholera morbus* is a violent purging and vomiting of bilious matter, attended with gripes, sickness, and a constant desire to go to stool. It attacks suddenly, and is most commou in autumn. This disease is quickly fatal if proper means are not used in due time for removing it.

In warm climates it is met with in all seasons of the year; but in cold climates it is apt to prevail most during the autumnal months, when there is excessive heat, or sudden transitions from heat to cold; and the violence of the disease has usually been observed to be greater in proportion to the intenseness of the heat—circumstances which induce a belief that cholera morbus is the effect of a warm atmosphere producing some change in the state of the bile, which may consist either in the matter of the bile being rendered more acrid, or its secretion being preternaturally increased.

CAUSES.—It is occasioned by a redundancy and putrid acrimony of the bile; by eating more than can be digested; by food that easily turns rancid or sour on the stomach, as butter, bacon, sweetmeats, cucumbers, melons, cherries, and all cold and unripe fruits. It sometimes is the effect of strong acrid purges or vomits, or of poisonous substances taken into the stomach; or of violent passions.

SYMPTOMS.—It is generally preceded by a heartburn, sour belchings and flatulencies, with pain of the stomach and intestines. To these succeed nausea, excessive vomiting, and purging of green, yellow, or blackish colored bile; with a distention of the stomach and violent griping pains. Also, great thirst, quick and unequal pulse, and often a fixed, sharp pain about the navel. As the disease advances, the pulse sinks so low as to be quite imperceptible, the extremities grow cold or cramped, and are often covered with a clammy sweat, the urine is obstructed and there is a palpitation of the heart. Violent hiccupping, fainting and convulsions, are the signs of approaching death.

CURE.—At the beginning of this disease, the efforts of Nature to expel the offending cause should be assisted: therefore, give plentifully of thin broths to facilitate the vomiting. Very weak chicken broth perhaps is preferable to any other, for this purpose; it should not only be drank plentifully to promote the vomiting, but a clyster of it given every hour, to promote purging; or camomile tea, warm water, thin water gruel, barley water, linseed tea, or other diluting liquors may be drank. In addition to these means, flannel cloths, wrung out in the "anodyne wash," warm, may be applied on the region of the stomach, renewing them as often as they become dry.

After these evacuations have been continued for some time, a decoction of toasted bread may be drunk to stop the vomiting. The bread should be toasted till it is of a brown color, and afterwards boiled in spring water. If this does not put a stop to the vomiting, two table spoonsful of the *chalk julep*, with ten drops of laudanum, may be taken every hour till it ceases.

The vomiting and purging ought never to be stopped too soon, however. As long as these discharges do not weaken the patient, they are salutary, and may be allowed to go on, or rather ought to be promoted. But when the patient is weakened by the evacuations, which may be known by the sinking of the pulse, &c. Recourse must immediately be had to opiates, as recommended above,

which may be washed down with a glass of peppermint or cinnamon water; and to which may be added, strong wines and generous cordials. Warm negus, or wine whey, will likewise be necessary to support the patient's spirits, and promote the perspiration. The *fever powders* will help to equalize the circulation. The patient's legs should be bathed in warm water, and afterwards rubbed with flannel cloths, or wrapped in warm blankets, and warm bricks applied to the soles of the feet.

The application of a blister to the stomach will sometimes put a stop to the vomiting.

When the violence of the disease is over, to prevent a relapse, it will be necessary for some time, to continue the use of small doses of laudanum. Ten or twelve drops may be taken in a glass of wine, twice a day for eight or ten days, the patient's food ought to be nourishing, but taken in small quantities, and he should use moderate exercise. As the stomach and intestines are generally much weakened, an infusion of colombo root, or other bitters, in wine, sharpened with elixir vitriol, and mint water, may be drunk for some time.

No physician ought to despair of relieving the patient, even in the most desperate circumstances. The treatment here laid down, and particularly the opiates, if judiciously administered and duly persisted in, will often cure the most obstinate. I would therefore advise, in such cases, a full reliance on its final efficacy, rather than a rash impatience to try other medicines, far more uncertain, and perhaps dangerous.

DIARRHŒA OR LOOSENESS.

Diarrhœa, in many cases, is not to be considered as a disease, but rather as a salutary evacuation. It ought therefore, never to be stopped, unless when it continues too long, or evidently weakens the patient. As this, however, sometimes happens, we shall point out the most common causes of a looseness, with the proper method of treatment.

When a looseness is caused by catching cold, or an obstructed perspiration, turning the humors in upon the bowels, the patient ought to keep warm, drink freely of weak diluting liquors, mints, &c.; bathe his feet and legs frequently in lukewarm water, wear flannel next his skin, and take every other method to restore the perspiration to the surface.

In a looseness which proceeds from excess or repletion, an emetic is the proper medicine; for if the fountain, (the stomach,) is emptied, the stream must dry up, of course. Emetics not only cleanse the stomach, but promote all the secretions. A day or two after the emetic, rhubarb may be taken, and repeated two or three times if the looseness continues. The patient ought to live on light food, of easy digestion, and drink thin gruel, &c.

A looseness occasioned by the obstruction of any customary evacuation, must be cured by restoring the evacuation, or by cleansing the system of the vitiated humor. This latter I should certainly consider preferable, and I generally effect it with the *anti-mercurial syrup*.

A periodical looseness ought never to be stopped. It is always an effort of nature to carry off some offending matter, which if retained within the body might have fatal effects. Children are very liable to this kind of looseness, especially while *teething*. It is, however, so far from being hurtful to them, that such children generally get their teeth with the least trouble. If these loose stools should at any time prove sour or griping, a tea spoonful of magnesia, with four or five grains of rhubarb may be given to the child in a little panada or other food; or the *chalk julep;* either of these, if repeated three or four times, will generally correct the acidity, and carry off the griping stools.

A diarrhœa, or looseness, which proceeds from violent passions or afflictions of the mind, must be treated with the greatest caution. Emetics and purges are very improper in this case. Opiates, and other anti-spasmodic medicines are most proper. Ten or twelve drops of laudanum may be taken in a cup of valerian or pennyroyal tea, every eight or ten hours, till the symptoms abate.

When a looseness proceeds from acrid or poisonous substances taken into the stomach, the patient must drink large quantities of diluting liquors, with oil or fat broths to promote vomiting or purging. Afterwards, if there be reason to suspect that the bowels are inflamed, small doses of laudanum, and other means may be used to allay it.

When the gout, repelled from the extremities, occasions a looseness, it ought to be promoted by gentle doses of rhubarb, or other mild purgative. The gouty matter should be driven back to the extremities by saffron tea internally, and warm fomentations to the feet and legs. The perspiration ought at the same time to be promoted by warm diluting liquors, as wine whey, with spirits of hartshorn, and a few drops of laudanum in it.

When a looseness proceeds from worms, which may be known by the sliminess of the stools, mixed with pieces of decayed worms, &c., medicines must be given which will kill and carry off these vermin, as snakehead, and such other as directed in the treatment of worms. Afterwards, limewater, or the sal æratus and rhubarb mixture, may be given, to strengthen the bowels, and prevent the new generation of worms.

In people whose stomachs are weak, violent exercise, immediately after eating, will occasion a looseness. In this case strengthening medicines to brace the stomach and give it tone, are requisite. Such persons ought likewise take a glass or two of old red port, or good claret. The following is no contempible remedy for a diarrhœa proceeding from a weak stomach: gizzard skins of fowls, dried and pulverized:—dose as much as will lay upon a shilling piece two or three time a day.

From whatever cause a looseness proceeds, when it is found necessary to check it, the diet ought to consist of rice boiled with milk, and flavored with cinnamon; mutton or lamb soup, rice, jelly, &c. The drink may be thin water gruel, rice-water, weak broth made from lean veal or a sheep's head, &c. The patient may also take occasionally thesize of a walnut of the *clove jelly*. Blackberry root,

sweet bugle, and many other things which will be found among the recipes, are very useful.

VOMITING.

Vomiting may proceed from various causes; as excess in eating or drinking; foulness of the stomach; acrimony of the food; translation of morbific matter of ulcers, gout, erysipelas, or other diseases, to the stomach. It may likewise come from a looseness having been too suddenly stopped; from a weak stomach, the colic, a rupture, fit of the gravel, worms, or from any kind of poison taken into the stomach. It is an usual symptom of injuries done the brain, as contusion, compressions, &c. It is also a symptom of wounds, or inflammations of the diaphragm, intestines, spleen, liver, kidneys, &c.

Vomiting may be occasioned by unusual motions, as falling, sailing, riding backward in a carriage, &c.; also by violent passions, or the idea of nauseous or disagreeable objects. Sometimes it proceeds from a regurgitation of the bile into the stomach: in this case, what the patient vomits is generally of a yellow or greenish color, and has a bitter taste. Nervous persons are often suddenly seized with fits of vomiting. Lastly, vomiting is a common symptom of pregnancy. In this case, it generally comes on about two weeks after the stoppage of the *menses*, and continues during the first three or four months.

When vomiting proceeds from a foul stomach or indigestion, it is not to be considered as a disease, but as the cure of a disease. It ought, therefore, to be promoted, by drinking lukewarm water or thin gruel. If this does not put a stop to the vomiting, a dose of bloodroot, lobelia, or ipecacuanha, may be taken, and worked off with weak camomile tea.

When the striking in of the gout, or any humor of the system, occasion vomiting, these must first be repelled from the stomach, and afterwards cleansed out of the system by alteratives, &c.

When vomiting is the effect of pregnancy it may generally be mitigated by keeping the body gently open with laxative food and purgatives of the mildest kind, as butternut, figs, manna, senna, and the like: if necessary, the sal æratus and rhubarb mixture may be given occasionally in small doses. Pregnant women are most apt to vomit in the morning, immediately after getting out of bed, which is owing partly to the change of posture, but more to the emptiness of the stomach. It may be generally prevented by taking a dish of coffee, tea, or some light breakfast, in bed. Women in this situation ought to be kept easy, both in body and mind. They should neither allow their stomachs to get quite empty, or eat much at once. Cold water is very proper drink in this case; if the stomach be weak, a little brandy may be added to it. If the spirits be low, a little cinnamon water, with her other drink, may be taken.

If vomiting proceeds from weakness of the stomach, bitters will be of service. Columbo, or golden seal, in wine or brandy, with as much rhubarb as will keep the bowels open, are excellent medicines in this case.

Elixir vitriol is also a good medicine, and may be taken in doses of fifteen or twenty drops, three times a day, in water.

A vomiting which comes from acidities in the stomach, is relieved by alkaline purges. The best preparation of this kind, is the sal æratus and rhubarb mixture; also magnesia, a tea spoonful three or four times a day, in a dish of tea, or milk; the chalk julep, &c.

When vomiting proceeds from violent passions, or affections of the mind, all evacuants, particularly vomits, must be avoided. These are dangerous. The proper medicines are cordials, with a little laudanum.

When vomiting proceeds from spasmodic affections of the stomach, musk, castor, valerian, and other anti-spasmodic medicines, are of use. Warm and aromatic plasters have likewise a good effect. Aromatic medicines may likewise be taken inwardly, as cinnamon or mint tea, wine, with spiceries boiled in it. The region of the stomach may also be rubbed with strong brandy or other spirits. The belly should be fomented with warm water, or the patient immersed up to the breast in a warm bath.

Alkaline draughts, as the sal æratus mixture, soda, &c., taken in the act of effervescence, or with a little peppermint or cinnamon water, will generally stop vomiting, from whatever cause it is produced. If soda, the draught must be swallowed before the effervescence is over, and may be repeated every two hours, or oftener, if necessary.

DYSENTERY, OR BLOODY FLUX.

A dysentery is a flux of blood from the bowels. It is most common in marshy countries, where, after hot and dry summers, it is apt to become epidemic. Persons are most liable to it who are much exposed to the night air, or where it is confined and unwholesome.

Causes.—The dysentery may be occasioned by any thing that obstructs the perspiration or renders the humors putrid; as damp beds, wet clothes, unwholesome diet, bad air, &c. An acrid blood, erosion of the inner membrane of the intestines, long continuance of a diarrhœa, violent purges, &c. It is also communicated by infection.

Symptoms.—It is known by a violent flux of the belly, attended by violent pain of the bowels, a constant inclination to go to stool, and generally more or less blood in the stools. It begins like other fevers, with chilliness, loss of strength, quick pulse, great thirst, and an inclination to vomit. The stools at first are greasy and frothy, afterwards streaked with blood, and at last have the appearance of pure blood, mixed with small bits of film or skin. Worms are sometimes passed both upwards and downwards through the whole course of the disease. When the patient goes to stool, he feels a bearing down, as if the whole bowels were falling, and sometimes a part of the intestine is actually protruded, which proves exceedingly trou-

blesome, especially in children. Wind is likewise often a troublesome symptom towards the end of the disease.

This disease may be distinguished from a diarrhœa or looseness by the acute pain of the bowels, and the blood which generally appears in the stools; and from the cholera morbus by its not being attended with such violent fits of vomiting.

Prognostics.—If stopt too soon it might be productive of the worst consequences. In old or delicate persons, or such as have been wasted with the gout, scurvy, or other lingering diseases, it generally proves fatal. Vomiting and hiccuping are bad signs, as they show an inflammation of the stomach. Green, black, and stinking stools show the disease to be of the putrid kind. If clysters are immediately returned it is unfavorable. A feeble pulse, coldness of the extremities, with difficulty of swallowing, fainting, and convulsions, are signs of approaching death.

Cure.—Nothing is of more importance in this disease than cleanliness. Every thing about the patient should be frequently changed. The excrements should never be suffered to continue in his chamber, but removed immediately, and buried under ground. A constant stream of fresh air should be admitted into the patient's chamber, and it ought frequently to be sprinkled with vinegar, lemon juice, or other acids.

The patient's spirits must be kept up with the hope of a cure. Nothing tends more to make any putrid disease mortal, than the fears and apprehensions of the sick. A flannel waistcoat worn next the skin has often a very good effect in dysentery, by promoting perspiration. Care should be taken, however, not to leave it off too soon.

In this disease, the greatest attention should be paid to the patient's diet: flesh, fish, and every thing that has a tendency to turn putrid or rancid on the stomach, must be abstained from. Apples boiled in water, water-pap, and plain light pudding, with broth made from the gelatinous or glue-like parts of animals, may constitute the principal part of the patient's food. Gelatinous broth not only answers the purposes of food, but likewise of medicine. The manner of making this broth is: take a sheep's head and feet, with the skin on them, and burn the wool off with a hot iron; afterwards boil them till the broth is quite a jelly. A little cinnamon, or other aromatic may be added, to give the broth an agreeable flavor, and the patient may take a little of it warm, with toasted bread, three or four times a day. This broth, although simple, has cured whole families, when the common remedies failed.

Another kind of food, very proper in dysentery, is made by boiling a few handsful of fine flour, tied in a cloth, for six or seven hours, till it becomes as hard as starch. Two or three table spoonsful of this may be grated down and boiled in such a quantity of new milk and water, as to be of the thickness of pap. This may be sweetened to the patient's taste, and taken for his ordinary food.

In a *putrid dysentery*, the patient may be allowed to eat freely of most kinds of good ripe fruit; as apples, currants, strawberries, and such like. These may be eaten raw, or boiled with milk. Good

fruit is in every respect calculated to counteract the tendency to putrefaction, from whence the most dangerous kind of dysentery proceeds.

Whey may be used for common drink. The dysentery has often been cured by this alone. It may also be used as a clyster.

Medicine.—Begin the cure by cleansing the first passages. For this purpose an emetic must be given, as of blood root, ipecac, or lobelia, and worked off with weak camomile tea. The day after the vomit, a small dose of rhubarb, or castor oil, may be given, or sufficient to procure an evacuation. These may be repeated every other day, if necessary.

In addition to these evacuations, and the regimen prescribed above, especially if the case is obstinate, a decoction of *witch-hazle bark*, two ounces boiled to a quart, and then again boiled with as much more new milk, and tinctured with the "balsam of life," or peppermint-water, with a little sugar, may be drank freely for common drink, as much as the stomach will bear. This destroys the canker, and is very healing, while at the same time it affords nourishment; and may be depended on with certainty. The same may also be used for clysters.

If astringents are deemed necessary, a clyster of starch, or fat mutton broth, with thirty or forty drops of laudanum in it, may be administered three or four times a day, if necessary. If this should not prove sufficiently astringent, a decoction of crane's-bill or sweet bugle, &c., may be added. The bowels should not be suffered to remain closed, however, more than ten or twelve hours at a time, till the danger is removed.

If the obstinacy of the case should render it necessary, astringents may also be given sparingly by the mouth, as the sweet bugle, laudanum, kino, crane's-bill, &c. Port wine, properly diluted with water, may also be taken.

The buds of birch, powdered, and mixed up with a conserve of red roses, is a medicine that will seldom disappoint expectation. Gizzard skins of fowls, dried and pulverized, and taken two or three times a day, as much as will lay on a shilling piece, is no despicable remedy. I make great use of it.

In the advanced and chronic state of the disease, at which time acidity of the stomach is apt to prevail, alkalies and absorbents, as the chalk julep, sal æratus and rhubarb, or even lime-water, become necessary. These may be joined with opiates.

Persons who have been cured of this disease are very liable to a relapse; to prevent which, great circumspection with respect to diet, is necessary. He should live principally on milk and vegetables, for a time. Gentle exercise on horseback or in a carriage, is of great service. He may likewise use bitters infused in wine or brandy; and may drink twice a day half a gill of lime-water, mixed with an equal quantity of new milk.

DIABETES.

The diabetes is a frequent and excessive discharge of urine. It is seldom met with in young people: but often attacks persons in the decline of life, especially those who labor hard, or have been hard drinkers in their youth.

Causes — A diabetes is often the consequence of fevers, fluxes, &c., when the patient has suffered by excessive evacuations. Also of great fatigue, hard drinking, strong diuretic medicines, as cantharides, spirits of turpentine, &c. It is often caused by a laxity or dilatation of the kidney glands; or from a thin, dissolved state of the blood.

Symptoms.—In diabetes, the urine generally exceeds in quantity all the liquid food which the patient takes. It is thin, pale, of a sweetish taste, and agreeable smell. The patient has a continual thirst, with some degree of fever; his mouth is dry, and he frequently spits a frothy spittle. The strength fails, the appetite decays, and the flesh wastes away till the patient is reduced to skin and bone. There is a heat in the bowels, and frequently the loins, testicles and feet are swelled.

Diabetes is often preceded or accompanied by an affection of the lungs, or some part of the chest. If of long standing or coming on after the departure of a fever, it is dangerous. In drunkards, or old people, it is seldom removeable.

Cure.—Every thing that stimulates the urinary passages, or tends to relax the habit, must be avoided. For this reason the patient should live chiefly on solid food. His thirst may be quenched with acids; as sorrel whey, lemon juice, vinegar, elixir vitriol, &c. Mucilaginous vegetables, or rice, with milk, are proper food. Also, oysters, crabs, &c.

Lime water, in which a due proportion of oak bark has been steeped, may be used. The cold bath should be used often. The patient should lie on a hard bed or matrass; as nothing hurts the kidneys more than lying too soft. Friction over the part, is useful.

Medicine.—These may be made up from the classes of astringents, chalybeates, balsamics, acids, strengthening and tonic medicines. Gentle purges, if the patient be not too much weakened by the disease, have a good effect. These may consist of rhubarb, with caraway or any other spiceries, infused in wine, and may be taken in such quantities as to keep the body gently open. Tonics, as the *tonic tincture*, colombo, golden-seal, unicorn, &c., are necessary to brace up the relaxed fibres.

The patient must next have recourse to astringents. From six to ten grains of gum kino may be taken three or four times a day, or oftener, if the stomach will bear it; or a decoction of crane's-bill,

of oak bark, or sweet bugle, may be used. Alum-whey is also very servicable: it is made by boiling two quarts of milk over a slow fire, with three drachms of alum, till the curd separates. This may be taken in the dose of a tea-cup full three or four times a day. These may be tinctured with a few drops of laudanum in the dose when taken.

A blister applied over the sacred bone, will often prevent involuntary discharges.

There is a disease incident to laboring people in the decline of life, called an *incontinency of urine*. But this is very different from the diabetes, as the water passes off involuntary, by drops, and does not exceed the usual quantity. It is owing to a relaxation of the constricter of the bladder; and is often the effect of palsy. This may be mitigated by astringents, but is seldom curable. A piece of sponge should be worn to prevent the urine from galling the parts.

SUPPRESSION OF URINE.

A stoppage of urine may proceed from various causes; as an inflammation of the kidneys, or bladder; small stones or gravel lodging in the urinary passages; hard fœces lying in the rectum; pregnancy; a spasm or contraction of the neck of the bladder; venereal, clap; stricture; clotted blood, &c.

If the obstruction proceeds from inflammation of the kidneys or bladder, the treatment will be found before described. Very small gravel, by getting down into the neck of the bladder, irritates it so as to produce a spasm: or, the gravel may be so large as totally to obstruct the passage: when either of these is the case, the cleavers tea, with ten drops of oil of pumpkin seeds every two hours till relief is obtained, will open the passage. In addition to these, a large poultice of bruised onions must be laid over the lower part of the belly. These will relax the spasm, and give speedy relief. If hard fœces, in the rectum produce the suppression, they must be removed by clysters. If there is a stricture of the urethra from the venereal disease, general remedies must be taken to remove the cause; while the oil of pumpkin seeds, or cleavers, may be taken inwardly, and an onion poultice applied outwardly, to relax the constriction. I have often cured a stricture with the *anti-mercurial syrup* alone.

Sometmes an obstruction of urine comes on in old people, who have labored hard, or from strains, which seems to proceed from an enlargement of the prostate gland at the neck of the bladder, or a thickening of the urethra, from a humor settling upon that part. This must be relieved, if at all, by cleansing syrups, and the above mentioned relaxing diuretics.

Blisters sometimes create a spasm upon the urinary passages.

In all inflammatory or spasmodic obstructions, fomentations are beneficial. These may consist of decoctions of mild vegetables, as marsh-mallows, camomile, oats, hops, &c. Cloths dipped in these may be applied to the part; or a bladder filled with the warm decoction may be laid on; or the warm herbs may be put in a flannel

bag and laid on. If the inflammation is great, use the "anodyne wash."

In all obstructions of urine, the body ought to be kept open by warm and emollient clysters.

The food must be light and mucilaginous, as weak broths, decoctions of marsh-mallows, comfrey, &c.

GRAVEL AND STONE.

These diseases are the consequences of a peculiar disposition of the fluids, and more particularly the secretion of the kidneys, to form a calculous matter, and have been supposed to be owing to the presence of an acid principle in them, called the uric acid. This is accompanied with a coldness and laxity of the parts, generally.

When small stones are lodged in the kidneys, or discharged along with the urine, the patient is said to be afflicted with the gravel. If one of these stones happens to make a lodgment in the bladder for some time, it accumulates fresh matter, and at length becomes too large to pass off with the urine. In this case the patient is said to have the stone.

Causes.—The stone or gravel may be occasioned by high living; the use of astringent wines; drinking hard water, a sedentary life; lying too hot, soft, or too much on the back; the constant use of water impregnated with earthy or stony particles. It may likewise proceed from an hereditary disposition. Persons in the decline of life, and those who have been much afflicted with gout or rheumatism, are most liable to it.

Symptoms.—Small stones or gravel in the kidneys occasion fixed pains in the loins, sickness, vomiting, and sometimes bloody urine, and not unfrequently, a slight suppression of urine. When the stone descends into the *ureter*, and is too large to pass along with ease, all the above symptoms are increased; the pain extends towards the bladder; the thigh and leg of the affected side are benumbed; the testicles are drawn upwards, and the urine is obstructed.

A stone in the bladder is known from the pain at the time, as well as before and after making water; the frequent inclination void urine: the urine coming away by drops, or stopping suddenly when it was running in a full stream; by a violent pain in the neck of the bladder upon motion, especially on horseback, or in a carriage on a rough road; or from a white, thick, copious, stinking, mucous sediment in the urine; from an itching at the top of the penis; from bloody urine; from an inclination to go to stool during the discharge of urine; the patient passing his urine more easily when lying than in an erect posture; from sharp pain in passing the last drops of urine, from the gravel being drawn into the mouth of the passage.

Any extraneous substance in the bladder will soon form a nucleus. Where gravel has once formed in the pelvis of the kidneys, or elsewhere, it continues to increase by receiving on its surface new

layers of uric acid. This is the reason why the calculi is formed of successive layers.

Cure.—Persons affected with the gravel or stone should avoid all aliments of a heating or windy nature, as salt meats, sour fruits, &c. They may use for diet, such things as tend to promote the urine keep the body open, as asparagus, lettuce, parsley, turnips, carrots, and radishes; also onions, leeks and celery, which are reckoned medicinal; together with decoctions of mucilaginous vegetables, as marshmallows, parsley, liquorice, linseed, &c. Whey, buttermilk, barley-water, &c., are good for common drink.

To prevent a return, equal quantities of limewater and buttermilk should be drank at meals, and constantly to the quantity of a quart a day. Gentle exercise is proper.

Medicine.—In what is called a fit of the gravel, which is occasioned by a stone sticking in the *ureter, or urethra,* cooling and relaxing diuretics and fomentations, cataplasms, &c., are necessary. These have been fully pointed out in the treatment of inflammation of the kidneys and bladder. I shall therefore briefly mention them. A strong *cold* infusion of cleavers (for *steeping* destroys its virtue,) should be drank constantly, with or without ten drops of pumpkin-seed oil, every three hours; these greatly relax constriction and open the passage. The oil alone may be used in larger quantity, when the other cannot be obtained. It is the most powerful diuretic I am acquainted with. At the same time, put large poultices of onions, or garlics, bruised and slightly warmed upon the lower part of the belly, small of the back, and over the kidneys, if the stone is in the ureter.

This treatment I have often seen give almost immediate relief from the most excruciating agony.

In all cases of gravel and stone, I prescribe a constant drink of the *cold* infusion of cleavers, or goose grass, made strong. This simple treatment alone has cured three fourths of the patients upon whom I have tried it. One man in particular, who had been afflicted with it nearly twenty years, and for the latter part of the time, so severely, as to be disabled from business, was entirely relieved in three weeks by merely drinking this tea alone: it dissolved the stone and brought it away in a sandy substance. This man has remained entirely free from it to this time; more than two years.

When there is a muddy, slimy substance discharged with the urine, this cleavers infusion will effectually cleanse it out of the kidneys and bladder.

Alkalies, as the sal æratus, soda, lime-water, particularly that made from oyster shells; or lime-water and castile soap, shaken together, may be drank constantly for a preventative of gravel.

Many things have been recommended at different times as remedies for the gravel; as an infusion of the seeds of wild carrot, sweetened with honey; muriatic acid, twenty or thirty drops, three or four times a day; the *uva ursi*, or bear's whortle berry, in powder, from half to a whole drachm, two or three times a day; also, queen of the meadow, milkweed, black currant root, bark, gooseberry, do. rushes, &c.

INVOLUNTARY DISCHARGES OF BLOOD.

Spontaneous discharges of blood, or hemorrhage, often happen from various parts of the body. These are not always dangerous, and often prove salutary. When such discharges are critical, which is frequently the case in fevers, they ought not to be stopped. Nor indeed is it proper at any time to stop them, unless they be so great as to endanger the patient's life.

Periodical discharges of blood from any part of the body must not be stopped. They are always the efforts of Nature to relieve herself. In the early period of life, bleeding at the nose is very common. Those who are further advanced in years, are more liable to a discharge of blood from the lungs. After the middle period of life, the piles are common; and in old age, discharges of blood from the urinary passages.

Involuntary fluxes may proceed from very different and opposite causes; as a sanguine temperament, laxity of the vessels, plethoric habit; determination of blood to one particular part; inflammatory disposition of the blood, as in fevers, particularly when there is an obstructed perspiration and a stricture upon the skin, or bowels, &c.; violent passions; overstraining, or injuries.

The cure of hemorrhage must be adapted to its cause.

BLEEDING AT THE NOSE.

When this requires to be stopped, let the patient blow out his nostril, or nostrils clean, and then immediately take a solution of gum kino, or crane's-bill, or any other strong astringent, in the palm of his hand, and snuff it up the bleeding nostril: repeat if necessary. This will generally stop it.

When these means are not sufficient, let the patient be seated on a cold stone, leaning his head forward, and then pour cold water in a continual stream on the head and back of the neck; or if it can be had, snow or ice may be laid on. Cloths dipped in cold water may be laid on, and changed as often as they get warm. If the discharge still continues, tie a cord round the legs and arms so as to compress the veins and prevent the return of the blood.

When bleeding at the nose proceeds from any general disease, the treatment must be directed to the cause.

SPITTING OF BLOOD.

This is sometimes an idiopathic, or original disease; though it may continue many years without manifest inconvenience. It shews a consumptive habit.

Cause.—Tenderness and weakness of the lungs; violent exertions in speaking or singing; excessive drinking. It is always attended with danger. Sometimes it is a symptom of Pleurisy or inflamination of the lungs, when it is favorable; but more often it is

a symptom of consumption and ulceration of the lungs, when it is a bad symptom. It is often a finishing stroke in the consumption, towards the latter stage of that disease, bursting out with such violence that the patient bleeds to death in a few minutes.

Symptoms.—Spitting of blood is generally preceded by a sense of weight and oppression of the breast, a dry tickling cough, a hoarseness, and a difficulty of breathing; sometimes it is ushered in with shivering, coldness of the extremities, costiveness, pain in the back, &c. These show a general stricture upon the vessels, and requires opening diaphoretics.

Spitting of blood in a healthy person is not dangerous; but when it attacks the tender and delicate, whose fibres are lax, considerable care is requisite for its removal. When it proceeds from an ulcer in the lungs it is generally fatal.

Cure.—An emetic is generally of great benefit, although it may appear singular. It appears to act by breaking up the constriction, and taking off the determination to the lungs. The body should be gently opened, and the feet placed in warm water.

To check the discharge, I usually make use of the sweet bugle herb, which is moderately astringent, and rarely fails to stop it in a short time, without any injurious consequences. An ounce or two of it may be steeped to a pint, and a gill drank every fifteen minutes, till the object is effected. If stronger astringents are required, the crane's-bill, kino, oak bark, &c., may be given cautiously.

Common salt has the reputation of curing an hemorrhage from the lungs, almost to a certainty. The mode of giving it is, to pour down from a tea to a table spoonful of fine salt as soon as possible after the discharge begins. This quantity generally stops it; but the dose must be repeated daily for three or four days to prevent a return. If the bleeding continues the salt must be continued in large doses, till it is checked.

The conserve of roses, or rose-water itself is a good medicine. Acids, as elixir vitriol, &c., should be taken and continued for some time to prevent a return; or which is better, the "balsam of life," should be taken continually.

The food should be cooling and strengthening. Milk may form a principal part of the diet. The patient should beware of vigorous efforts of the body, and violent agitations of the mind.

VOMITING OF BLOOD.

This is not so common as the other discharges of blood which have already been mentioned; but it is very dangerous, and requires particular attention. It is generally, preceded by pain in the stomach, sickness and nausea; and is accompanied with great anxiety and frequent fainting fits.

This disease is sometimes periodical in which case it is not so dangerous. It may proceed from an obstruction of the menses, or the piles; from wounds of the stomach, strong vomits or purges, acrid

poison, or sharp substances taken into the stomach. In hysteric women it is a very common, though not so dangerous, symptom.

A great part of the danger in this disease arises from the extravasated blood lodging in the bowels, and becoming putrid, by which means a dysentery or putrid fever may be occasioned. To prevent this, keep the bowels open with clysters. Purges must not be given till the discharge is stopped. All the food and drink must be of a mild cooling nature, and taken in small quantities. Even cold water drank has sometimes proved a remedy, but it will succeed better when sharpened with elixir vitriol. Opiates may be of service, but they must be given in very small doses, as four or five drops of laudanum, twice or thrice a day.

After the discharge is over, as the patient is generally troubled with gripes occasioned by the acrimony of the blood lodged in the intestines, gentle purges may be given.

BLOODY URINE.

This is a discharge of blood from the vessels of the kidneys or bladder, occasioned by their being either enlarged, broken, or eroded. It is more or less dangerous according to the cause.

When pure blood is voided suddenly, without interruption and without pain, it proceeds from the kidneys; but if the blood be in small quantity, of a dark color, and emitted with heat and pain about the bottom of the belly, it proceeds from the bladder. When bloody urine is occasioned by a rough stone descending from the kidneys to the bladder, which wounds the ureter, it is attended with a sharp pain in the back, and difficulty of making water. If the coats of the bladder are hurt by a stone, and the bloody urine follows, it is attended with the most acute pain and the previous stoppage of urine.

Bloody urine may also be occasioned by falls, blows, hard riding, or any violent motion. It may also proceed from ulcers of the bladder, from chordee, and sharp diuretic medicines, particularly cantharides.

If mixed with purulent matter, it shews an ulcer somewhere in the urinary passages. Sometimes this discharge proceeds from excess of blood, in which case it is salutary. If the disease, however, be great, it may waste the patient's strength, and occasion an ill habit of body, a dropsy, or a consumption.

The treatment of this disorder must be directed to the cause. When owing to the stone, we must endeavor to remove that. If attended with symptoms of inflammation, mild purgatives and cooling diuretics, as cleavers, are proper. If it proceeds from a dissolved state of the blood, it is commonly the symptom of some malignant disease, as putrid fever, small pox, &c.; in which case warming and bracing tonics are required, together with wine, acids, &c. If from an ulcer in the kidneys, cleansing and healing medicines, as the *anti-mercurial syrup*, "balsam of life," balsam of fir, marsh-mallows, liquorice, &c.

If the case be urgent, gentle astringents may be ventured on, as

lime-water, rose-water, sweet-bugle, or kino, if necessary; giving tonics at the same time.

BLEEDING AND BLIND PILES.

A discharge of blood from the pile veins, is called the *bleeding piles.* When the vessels only swell, and discharge no blood, but are exceedingly painful, the disease is called the *blind piles.*

Persons of a loose spongy fibre, of a bulky size, who live high and lead a sedentary, inactive life, are most subject to this disease. Men are more liable to it than women, especially those of a sanguine, plethoric, or a scorbutic habit, or of a melancholy disposition.

The piles may be occasioned by an excess of blood; high seasoned food; violent exercise, particularly hard riding; neglect of usual evacuations; costiveness; straining hard at stool; pregnancy; acrimony, or vitiation of the fluids.

A flux of blood from the *anus* is generally the *effect* of a disease, and not a disease itself. It often carries off diseases, and is particularly beneficial in the gout, rheumatism, asthma, and hypochondriac complaints, and also in colics and inflammatory fevers.

Symptoms.—Swelling of the anus, great pain in going to stool, voiding of blood, sensation of pungent pain; heat, or weight and pressure in the anus.

They sometimes, though rarely, inflame, and become gangrenous; sometimes grow ulcerous and bring on a fistula. If they continue long without being resolved, they are exceedingly troublesome, and even render life burthensome. If they happen periodically, and are always attended with a discharge of blood, they are salutary evacuations, and to stop them may prove dangerous, without first purifying the system.

The Cure.—If it proceeds from the vitiation of the humors, cleansing medicines are required. I have usually made use of the *anti-mercurial syrup*, for the general remedy, and it has never disappointed me. The bowels should be kept gently open, and no hard fœces suffered to collect in the lower part of the rectum. For this purpose, laxative, emollient, and healing clysters should be used, particularly mullein tea, sweetened with molasses. I never venture to stop the discharge, unless it is weakening, before the blood is properly cleansed. If much canker is apparent, injections and washes of witch-hazle decoction, tinctured with the "balsam of life," is excellent. If the patient is feeble, tonics and acids may be used.

In the *blind piles*, the cause is the same, and the same general cleansing treatment is necessary. The drink must be diluting; and the bowels kept open by emollient and detergent clysters. The ointment composed of bittersweet, plaintain, and spikenard, is perhaps as good as any external application; or if they are very painful, a weak solution of sugar of lead, with laudanum, may be used with the ointment. Injections of a decoction of sumach bobs are second to none.

When the piles are exceedingly painful and swelled, but discharge nothing, the patient may sit over the steam of warm water; or poultices of leeks, garlics, or onions fried in butter, may be applied. If these do not produce a discharge, but the piles appear large, they may be opened. The operation is easy, and attended with no danger.

The pain of the piles is very often removed by an emetic. When a pile has a narrow neck, it is best extirpated by a knife.

When the piles are neglected, they are apt to bring on a FISTULA. This complaint is discovered by a stain of matter on the linen, which on examination, will be found to proceed from a small orifice in the neighborhood of the anus. This ulcer, or tube, sometimes opens into the rectum at its upper end. The sides of a fistula often become callus, and form a secreting surface. Therefore, in addition to the general cleansing and detergent remedies, we can only inject such things into the tube of the fistula, as will break up this callus, and stimulate the sides into an adhesion. For this purpose the balsam of life in witch-hazle tea, or bayberry tea, are applicable. These may also be tinctured with lobelia; also white vitriol.

A surgical operation for the cure of fistula, is very painful, and I consider it altogether preposterous. I have frequently seen the constrictor of the anus entirely destroyed by these operations, so that the miserable sufferer forever after discharged his excrements *involuntarily*. What a CURE is this! The original disease would be infinitely preferable.

HEAD-ACH.

Sometimes the pain is internal, sometimes external; sometimes it is an original disease, and sometimes symptomatic. When the head-ach proceeds from a hot bilious habit, the pain is very acute and throbbing; when from a cold phlegmatic habit, the pain is dull and heavy, with a cold sensation in the part.

CAUSES.—Whatever obstructs the free circulation of the blood through the vessels of the head, may occasion the head-ach. This is the case when the brain is compressed by an enlargement of the bones of the skull from disease, as in the venereal. The head-ach often proceeds from the suppression of the usual evacuations, as sweating of the feet, bleeding at the nose, &c. It may likewise proceed from any cause that determines a great flux of blood toward the head; as coldness of the extremities, or hanging down of the head for a long time. Whatever prevents the return of blood from the head, will likewise occasion a head-ach; as a tight cravat, a new hat, or the like.

When the head-ach proceeds from the stoppage of a running at the nose, there is a heavy obtuse pain pressing in the fore part of the head, in which there seems to be such a weight that the patient can scarcely hold it up. Sometimes the head-ach is occasioned by the striking in of any eruptive disease.

A frequent cause of head-ach is, fermentation or crudities in the stomach, from which arises an acid gas, affecting the nerves. It often proceeds also from costiveness and indigestion ; strong liquors, spasms, and deficiency of heat in the skull. There is likewise a most violent, fixed, constant and almost intolerable head-ach, which occasions great debility both of body and mind, prevents sleep, destroys the appetite, causes a swimming dimness of sight, a noise in the ears, convulsions, epileptic fits, and sometimes vomiting, costiveness, and coldness of the extremities, &c.

The head-ach is also a common symptom in hysteric and hypochondriac complaints ; as also in fevers.

When the head-ach attends an acute fever, with pale urine, it is an unfavorable symptom. In excessive head-achs, coldness of the extremities is a bad sign. When it continues long, and is very violent, it often terminates in blindness, apoplexy, deafness, palsy, or epilepsy.

THE CURE.—If symptomatic of some other disease, it is to be driven away by the removal of the disease which occasions it.

If it proceeds from the stomach, give an emetic, as lobelia, blood-root, ipecac, &c. These can seldom come amiss, for they relax the constriction and equalize the circulation, thereby relieving the head. Bathe the head freely with the *anodyne wash*—it gives great relief. If attended with costiveness, remove that. If it proceeds from an acrid serum in the blood, blisters may be applied to the back of the neck, strong purgatives administered, and general remedies used for quickening and strengthening the blood. The fever powders, and other diaphoretics are appropriate. Opiates may be given to allay the severity of the pain. Sneezing powders must not be omitted.

The feet and legs should be bathed in warm water, and drawing poultices may be applied. For common drink, valerian tea is excellent. Ginger is highly beneficial, in this and all other disorders affecting the nerves. Electricity often removes it.

If arising from fermentation in the stomach, the sal æratus and rhubarb mixture, taken continually for a time, will be found to remove it. As a substitute for the *anodyne wash*, in cases of inflammation, salt dissolved in vinegar may be used.

When the head-ach arises from a vitiated state of the humors, as in the scurvy and venereal disease, the proper remedies for those diseases become proper ; as the *anti-mercurial syrup*, decoctions of sarsaparilla, &c.

When the head-ach is so intolerable as to endanger the patient's life, or is attended with continual delirium, opiates may be given ; as twenty drops of laudanum in a cup of valerian or pennyroyal tea, twice or thrice a day. At the same time the head should be bathed constantly with the *anodyne wash*, while draughts of mustard seed, or horse-radish, ought to be applied to the feet.

TOOTH-ACH.

Tooth-ach may proceed from obstructed perspiration, wet feet, or any of the other causes of inflammation ; from neglecting the usual

coverings of the head, or sitting near an open window in a draught of cold air. It is also caused by too hot or too cold food; great quantities of sugar, sweetmeats, &c.; cracking nuts with the teeth; filing or scraping the teeth, destroying the enamel. Breeding women are very subject to it.

The tooth-ach often proceeds from scorbutic humors, irritating the nerves and affecting the gums; from scurvy and foulness of the gums; and from weakness of the solids. If an ulcer is formed in the gum, or root of the tooth, the pain will continue till that is opened.

THE CURE.—I cannot approve of the common practice of drawing the teeth for all kinds of tooth-ach, even when they are decayed little or none; for I have seen so many toothless people, in after life, regretting this foolish destruction, when too late. And I am the more convinced that it is unnecessary, because, with the means here recommended, I have seldom failed of giving relief to this distressing disorder.

My method, which may appear novel to some, is simply to burn off the nerve of the teeth, where it passes through the outer part of the ear, thereby destroying the power of sensation in the teeth. Some may suppose that this will injure the teeth; but they must recollect that it is the *scnsitive* nerve only, that is destroyed, which is not necessary to the nutrition of the teeth. Besides, an experience of thirty years has taught me, that, instead of injuring the teeth, of which I never knew an instance, it actually preserves them from decay, by removing the câuse of irritation.

This nerve, however, which wholly supplies the lower jaw, only partially extends over the upper jaw; and for that reason, the destruction of it is not always a certain relief to the pain in the teeth of the upper jaw; particularly when it is connected with a species of rheumatic pain in the face. While, therefore, this operation, when well done, puts a certain end to all tooth-ach in the lower jaw, it may fail of giving entire relief in the upper jaw in perhaps half the cases, although it renders it far less liable to a return.

I am not without authority for this mode of curing the tooth-ach. Monro, who wrote more than an hundred years since, after describing the course and use of this nerve, has the following:

"We may have some distant views of some foundation in reason for the cure of the tooth-ach, by strong compression of the chin, or by applying blisters behind the ears, or by burning behind or on the ear. Among a great many instances of the good effect of the actual cautery in such a case, I shall give one which seems to be remarkable: J. M. was seized with the tooth-ach, a convulsion of that whole side of his face followed whenever the pain became acute, or he attempted to speak. After he had undergone bleeding, purging, *salivation*, setons, &c., without any benefit, he was cured, by applying a small cauterising iron to the antihelix"—[the inner circle of the auricle, or outer ear.]

This nerve may generally be seen crossing the ridge which runs across the middle of the ear, just above the entrance of the inner ear. It resembles a whitish chord, and is easily distinguished in a clear

skin, especially if swollen with pain. When this is burnt off, a very audible snap is usually heard. The pain of the operation is nothing compared to the extraction of teeth, as the nerve lies in the skin it requires only a trifling burn. The instrument I use is simply a rod of iron of the size of a large goose quill, and about nine inches in length, flattened at one end to a very blunt edge, nearly half an inch wide, which should be notched in the middle, so that it will sit across the ridge in the ear. This edge is to be heated almost to a red heat, and applied to each ear.

Thus I have made public an art, which has heretofore, in this country, been confined to myself, as far as I can learn, with perhaps one or two exceptions; and I do it, knowing that if the operation is rightly performed, it will save an immense amount of suffering to the human family, from this most intractable and aggravating disorder. Pecuniary or selfish views certainly have not induced me to this; for the knowledge of this secret has brought me a large sum annually.

In addition to this means, I give the patient the zanthoxylum, or tooth-ach bark, to chew. A piece as large as the finger nail is sufficient. It is very hot and stimulating, and causes an acrid water to run from the mouth almost in a stream. This should be repeated till the cause is removed and the pain relieved. This is peculiarly beneficial when the pain proceeds from a cold.

If the gums are swelled, and ulceration appears to be taking place, the gums should be scarified with a lancet, so as to bleed freely. If the ulcer is formed, and can be reached, it should be opened, as that must be done before relief can be obtained.

If there is a hole in the tooth, and the marrow is exposed, causing soreness, it should be plugged, to protect it from injury, from external substances, or air.

When there appears to be a flux of humors to the head, together with pain in the head, the *anodyne wash* may be freely applied to the head, and an emetic or purgative given, to draw the humors downward. If there appears to be a suppuration taking place in the gums, it may be assisted by holding a toasted fig between it and the gums.

If the pain in the upper jaw and face be severe, a plaster of a table spoonful of ground pepper, mixed with rye flour and vinegar, may be laid on the cheek; or, if this is not sufficient, a poultice of fresh potatoes, roasted and mashed, and laid on, will seldom fail to give relief, in the most obstinate cases.

Many other things are recommended as excellent, particularly the seeds of stramonium, pulverized and smoked in a pipe; or tobacco smoke; or a pill made of opium, camphor, oil of cloves, and oil of pepper put in the tooth. The blue-flag root, held to the tooth, will often cure.

Blistering plasters between the shoulders, have an excellent effect in stubborn cases. Electricity often relieves it.

If the tooth is very much decayed, as it can never again be made a sound tooth, it may be drawn, at the option of the patient. The tooth-ach may often be prevented by a purge.

Keeping the teeth clean has no doubt a tendency to prevent the tooth-ach. The best method of doing this is, to wash them with lime-

water every morning. All brushing or scraping of the teeth are dangerous.

PAIN IN THE FACE.

Chew the tooth-ach bark, and apply the potatoe poultice over the face, wherever affected. The *anodyne wash* may also be used to advantage; as also, emetics and purges. These will usually be found sufficient.

EAR-ACH.

This disorder chiefly affects the membrane which lines the inner cavity of the ear; and often accompanies or is caused by the tooth-ach. The same causes which produce the latter, may also bring on the former. It may also be occasioned by worms or insects getting into the ear, or being bred there; or by the collection of morbid matter in the ear. This often happens in the decline of malignant fevers, and occasions deafness, which is generally reckoned a favorable symptom.

CURE.—If from insects, or other body in the ear, they must be removed. A strong tincture of assafœtida may be dropped in warm, or some relaxing oils; afterwards the patient should take some sneezing snuff, which will often throw it out. The worms will sometimes crawl out of their own accord upon pouring in these oils.

If the pain proceeds from inflammation, the proper medicines are: poultices of potatoes, onions, or bread and milk, applied to the ear. Blisters behind the ear; or on the neck; purges; the *anodyne wash* to the head; fomentations and applications of hops, warmed with vinegar, camomile flowers, mallows, &c.

Ear-ach sometimes continues for some time without any apparent inflammation, and is then frequently removed by filling the ear with cotton or wool, moistened with laudanum or camphor. A plaster of burgundy pitch may be applied behind the ears.

DYSPEPSIA AND PAIN IN THE STOMACH.

This may proceed from various causes, as indigestion, wind, acrid bile; from sharp, acrid or poisonous substances taken into the stomach; worms, heartburn, flatulency, lightness at the pit of the stomach, and other dyspeptic symptoms. Striking in of gouty or other matter to the stomach.

Women in the decline of life are very subject to pains of the stomach and bowels, especially such as are afflicted with hysteric complaints. So also are hypochondriac men.

When the pain in the stomach is most violent after eating, it proceeds from some fault either in the digestion or food. In this case the patient ought to eat such food as he finds agrees with him best. If the stomach is foul, he should take a vomit, and afterwards a rhubarb purge. If acid prevails in his stomach, he should take the sal æratus and rhubarb mixture whenever necessary. In addition to all these, the patient should take warm stomachic bitters, daily, to remove the cause.

If wind is the cause, which may be known by a sensation of swelling at the pit of the stomach, and by the gulping up of wind, carminatives, as the pleurisy root, in powder, or united with calamus or angelica, may be taken to relieve the flatulency; and afterwards, bitters as before directed, should be taken to strengthen the stomach. In all these affections, *ginger* is an excellent remedy, to be taken constantly for a length of time, in powder, or tea, as much as can be borne well.

One important object in these dyspeptic affections, is, to keep down the acid that predominates in the stomach. Another is to keep the bowels open and regular; which must be done by making use of injections, and going to stool regularly at such an hour of the day, say after breakfast, and making an attempt at a passage, whether there is any inclination or not: and thus, after a time, and with the use of proper strengthening medicines, bring about a regular evacuation without any physical aid. Costiveness, unless removed, will render abortive all attemps to cure affections of the stomach. And physic must not be used to effect this, as it only weakens more and more.

The medicines, either separately or compounded, which are efficacious for strengthening the stomach in the above complaints, are, golden seal, (which I consider first and best,) pleurisy root, angelica, myrrh and iron, cayenne pepper, ginger, the clove jelly, gizzard skins, the *tonic tincture*, galangal, unicorn, valerian, balm of gilead buds, wormwood, tansy, whitewood, horse-radish, mustard, gentian, caraway, fennel, spikenard, plantain, bittersweet, mint, peppermint, orange peel, snakeroot, &c;. and above all, when it proceeds from a concentration of humors upon the stomach, cleansing medicines, as the *anti-mercurial syrup*, balsam of life, &c.

This complaint may likewise be greatly relieved by labor, especially digging, reaping, or any employment which keeps the bowels in motion. Thus, working in a garden has cured, when medicines failed.

When pain in the stomach is occasioned by the swallowing of acrid or poisonous substances, they must be discharged by vomit. This may be excited by butter, oils, or other soft things that sheath and defend the stomach.

When a pain in the stomach proceeds from a translation of gouty matter, warm cordials are necessary, as generous wines, brandy,&c. Some have drank a whole bottle of brandy, rum, or other spirits, in this case in a few hours, without being intoxicated, or even feeling the stomach warmed by it. The quantity to be taken must be left to the feelings of the patient. When there is an inclination to vomit, it may be promoted by drinking warm camomile tea.

When the disease is occasioned by worms, they must be destroyed.

If the stomach is greatly relaxed and the digestion bad, elixir vitriol will be beneficial.

WORMS.

Worms are of three sorts, viz: the *round worm*, whose seat is in the stomach; the *tape worm*, which is to be found in most of the in-

testines; and the small white worm, which infests the rectum. The tape-worm is white, very long, and full of joints.

CAUSE.—Eggs of insects received with the food, and a weak lax stomach.

SYMPTOMS.—Of the round worm—squeamishness, vomiting, disagreeable breath, gripes, looseness, swelling of the belly, fainting, loathing of food, and at other times a voracious appetite, a dry cough, convulsions, epileptic fits, and sometimes a privation of speech; greasy excrements, grinding of the teeth, slavering, picking of the nose, flushing heats, &c.

The peculiar symptoms of tape-worm are, swoonings, privation of speech, emaciation, and voracious appetite. The small worms of the rectum cause itching of the anus, looseness, and frequent inclination to go to stool.

If they remain long in the bowels, they produce a variety of unaccountable disorders: strange and incredible are the effects which are occasioned by these detestable vermin. Few persons are wholly free from them, particularly females: old people are not exempt from their attacks, although they often suppose so. After they are destroyed, they must be conveyed out of the body, by strong purges, otherwise they will create a putrid acrimony in the bowels.

THE CURE.—Numberless medicines are extolled for killing worms, though all of them fail sometimes. One rule to be observed, however, in the administration of all worm remedies, is, that they be prepared or given in molasses or other sweet substances, which serve as a decoy for the vermin.

I have formed the following compound very effectual in removing worms: take snakehead, the dried herb. 1-4th lb., boil in water to a pint: add aloes, 2 oz., assafœtida 1-2 oz., and alum, 1-2 oz; dissolve them, and then add to the whole a pint of molasses. Dose for a child two years old, a tea spoonful every fifteen minutes till it operates as physic; when it will usually bring away a stringy, slimy mass, the remains of the vermin.

Or, the snakehead alone, in decoction of an ounce of the dried herb boiled to a half pint, and sweetened, may be drank in the course of two hours, with short intervals, and then followed with a brisk cathartic, as aloes, blue flag, culver's root, or mandrake. This is usually successful.

Salt water, drank and laid with cloths upon the stomach, will often destroy worms; or, a dose of sulphur may be taken at night, and salt and water in the morning.

For the small pin worms in the rectum, injections must be used; as of salt water, or solution of assafœtida. Oily, clysters, sweetened with sugar or honey, are very efficacious in bringing these worms away.

To expel worms by an external application, take beefs-gall and the fresh juice of rue, equal quantities, (or a strong decoction of a like proportion of the dry herb,) add to these a little aloes, or snakehead, or wormwood, if convenient, and boil the whole to the consistence of a plaster. Then apply a plaster of this about three inches

square on the pit of the stomach for two or three days, changing it every day; at the end of which time give a strong purge, which will bring away the worms if they are there. This application has succeeded when many others have failed.

Among the vermifuges may be reckoned; black hellebore, or bear's foot, in decoction, or in powder, fifteen grains of the dried leaves, for a dose to a child, from four to seven years old, and repeated two or three times: male fern root, red cedar balls, tansy seed, worm seed oil, spirits of turpentine. Indian hemp, wormwood, pink root, old tobacco pipes, pulverized, alum, spotted alder, garlics and onions, iron, steel filings, &c.

But worms, though expelled, will soon breed again, if the stomach remains weak and relaxed; to prevent which we would recommend the use of alkalies, as lime-water; together with tonic bitters and strengthening medicines, in wine, as golden seal, centaury, camomile flowers, wormwood, tansy, iron and myrrh, the tonic tincture, gentian, columbo, snake root, &c.

Spirits of turpentine is often successful in destroying the tapeworm.

JAUNDICE.

The jaundice is a copious effusion of the bilious fluid throughout the whole habit of the body. It is first observable in the white of the eye, which appears yellow. Afterwards, the whole skin puts on a yellow appearance. The urine too is of a saffron hue.

There is likewise a species of this disease called the black jaundice.

Causes.—The immediate cause of jaundice is an obstruction of the bile, from biliary calculi, or stones, in the gall-bladder, or its ducts; from thickened bile; spasmodic constrictions of the ducts themselves; pressure from adjacent tumors; schirrosity of the liver, &c. The remote or occasional causes are, the bites of poisonous animals; the bilious or hysteric colic; violent passions; sometimes it proceeds from obstinate agues, particularly when the disease has been kept under without being cured, by the continual use of quinine, bark, &c. Pregnant women are very subject to it. It often proceeds from a too profuse secretion of bile.

Symptoms.—At first, weariness, langnor and inactivity; his skin is dry, and of a yellow color, as also the eyes; a pricking or itching pain over the whole body. The stools are of a whitish or clay color, and the urine, yellow. The breathing is difficult, and the patient complains of an unusual load or oppression of the breast. There is a heat in the nostrils, a bitter taste in the mouth, loathing of food, sickness of the stomach, vomiting, flatulency, and other symptoms of indigestion; swelling at the pit of the stomach, periodical colics, rumbling of the bowels, &c.

When the disease proceeds from an obstruction of the bile, the peculiar symptoms are, white or ash-coloured stools, obstinate cos-

tiveness, the color of the skin black, sour belchings. If from an overflowing of the bile, the stools are intensely yellow.

If recent, it is easily cured; a black turbid urine indicates the expulsion of the disease; the yellower the skin, the easier; the blacker, the harder it is to be removed. In a state of pregnancy it is of little consequence, as parturition removes it. From a schirrus of the liver the cure is difficult.

THE CURE.—The diet should be light, but not altogether vegetable, as veal or chicken broth, boiled apples, with light bread. Three or four raw eggs ought to be taken every day: they are of great advantage in any stage of the disorder. The drink should be buttermilk, whey, sweetened with honey, or decoctions of cool, opening vegetables, as marsh-mallows, liquorice, &c. Amusements are likewise of great use in the jaundice. Whatever, therefore, tends to promote the circulation, to cheer the spirits, must have a good effect, as dancing, laughing, singing, &c.

MEDICINE.—Whether the passage of the bile be obstructed by biliary concretions or spasms, the same plan nearly must be adopted. First, an emetic must be administered; and if the disease proves obstinate, it may be repeated once or twice. No medicines are more beneficial in the jaundice than emetics. By the commotion they excite, they frequently break up the obstruction. Blood root, lobelia, or ipecac, may be used for this purpose; and worked off with weak camomile or pennyroyal tea. The body must likewise be kept open by some laxative and alkaline mixture, or even Castile soap alone. Clysters may be used, and should have plenty of soft soap mixed with them. The *tonic tincture*, and iron and myrrh, may be given, moderately at first, increasing afterwards, if they have a beneficial effect. These are the best medicines that can be given, if the liver has not become schirrous.

Fomenting the parts about the region of the stomach, and liver, and rubbing them with a warm hand, or flesh brush, are very beneficial.

Jaundice, particularly if connected with an affection of the liver, has ofter been cured by the decoction or expressed juice of dandelion, persevered in for a sufficient length of time. Half an ounce of the green juice, or more if the patient can bear it, should be taken twice or thrice a day; or an equal proportion of the decoction. This should be taken in sufficient quantity at first to create a sensation that may be felt throughout the whole system.

In this disease soap alone, has been considered as almost a specific by some: but it is much better combined with rhubarb, and taken sufficiently to keep the bowels gently open. The iron and myrrh pills being mixed with soap are peculiarly appropriate.

Such things as quicken the circulation, stimulate the solids, and give a tone to the system, are proper, unless there is much inflammation; as golden seal, bayberry, angelica; blue and white cohush, vervain, saffron, wild cherry bark, in decoction, or cider; hard soot, hogs' gall, bitters of every kind, columbo, unicorn, horse-radish,

the tonic tincture, sulphur, gum guiaiacum, grains of paradise, the clove jelly, &c. A compound of the bark of white wood, boxwood, wild cherry, and prickly ash, of each one handful, and horse radish roots and mustard seed, each two ounces, and a handful of hops—all infused in a gallon of cider, is excellent in this disease. The dose is a wine glass full three times a day.

DROPSY.

The dropsy is a preternatural swelling of the whole body, or some part of it, occasioned by a collection of watery humor, or serum.—This may be effused under the cellular membrane, in the legs merely, or throughout the system; or it may be confined to particular parts, or cavities, as the abdomen, chest, brain, ovaria, womb, &c. When the lymph is contained in little vessels in distinct cells, like a bunch of grapes, they are called *hydatids*.

There is another species of dropsy called *tympanites*, which consists of rarified vapor, or putrid fat collected in the belly. This may be known by the tightness of the skin; the belly, if struck, sounds like a drum, from whence its name; no fluctuation of water can be perceived.

Causes.—Drinking ardent spirits—It is true, almost to a proverb, that hard drinkers die of a dropsy; sloth; excessive evacuations, as frequent and copious bleedings, strong purges often repeated, frequent salivations; the sudden stoppage of any customary evacuation, as the menses, piles.

The dropsy may proceed from whatever causes a relaxation of the absorbents, so that the fluids are not taken up and secreted, but effused into the soft parts of the body. This may be occasioned by weak watery food or liquors; long continued agues, especially where quinine has been administered; jaundice, schirrus of the liver, scarlet fever, diarrhœa, dysentery, consumption. It is more common in low, damp, or marshy situations. In short, whatever obstructs perspirations, or prevents the blood from being duly prepared, may occasion a dropsy.

Symptoms.—The universal dropsy generally begins with a swelling of the feet and ancles towards night, which for some time disappears in the morning. In the evening, the parts if pressed with the finger, will pit. The swelling gradually ascends, and occupies the trunk of the body, the arms, and the head. Afterwards the breathing becomes difficult, the urine is small in quantity, and the thirst great; the body is bound and the perspiration is greatly obstructed. To these succeed torpor, heaviness, a slow wasting fever, and a tickling, troublesome cough. This last is generally a fatal symptom, as it shews the lungs to be affected.

In dropsy of the belly, besides the above symptoms, there is a swelling of the belly, and often a fluctuation, which may be perceived by striking the belly on one side, and laying the palm of the hand on the opposite.

PROGNOSTICS.—If taken in time it is easily curable; and in the worst stages, a cure is not to be despaired of. When the disease comes on suddenly, and the patient is young and strong, there is great reason to hope for a cure, especially if the medicine be given early. But if the patient be old, has led an irregular life, or if there be reason to suspect the liver, lungs, ovaria, or any of the viscera are unsound or diseased, there is great reason to fear that the consequences will prove fatal. Abscesses, livid spots on the thighs, the body emaciated, the countenance pale, and a cadaverous aspect, are harbingers of death.

When there is not strength enough in the system to assist the operation of the medicines, there is indeed little hope.

THE CURE—Wholly consists in evacuating the waters which are gathered, and in preventing their collection for the future. To this end conduce cathartics, diuretics, detergents, emetics, diaphoretics, and (perhaps the sooner the better) tapping; after these, tonics, stomachics, iron, and astringents.

He must abstain as much as possible from all drink, especially weak and watery liquors, and must quench his thirst with mustard-whey, or acids, as juice of lemons, oranges, sorrel, elixir vitriol, and such like. His aliment ought to be dry, of a stimulating and diuretic quality, as toasted bread, the flesh of birds, or other wild animals, roasted; pungent and aromatic vegetables, as garlic, mustard, onions, cresses, horse-radish, smellage, &c. He may also eat hard biscuit dipped in a little wine or brandy; this is not only nourishing, but tends to quench thirst. Some have been actually cured of this disease by a total abstinence from all liquids; this, however, is not always advisable.

Exercise is of the greatest importance in the dropsy. If a patient be able to walk, dig, ride or the like, he ought to continue these exercises as long as he can. His bed ought to be hard, and his apartments dry and warm. In a word, every method should be taken to promote the perspiration, and brace the solids. For this purpose it will likewise be proper to rub the patient's body two or three times a day with hard cloth, or a flesh brush.

In the treatment of the dropsy, we should first ascertain whether the disease be an original one, or symptomatic of some other; as by removing the cause we shall often be enabled to remove the effect also, and thus perform a cure. For example, if a dropsy shall have arisen in consequence of intemperance, exposure to moist air, profuse bleeding, or, if it has proceeded from long continued agues, obstructions in the belly, or chest viscera, &c., the removal of these will be the first indications of a cure. The next will be, to evacuate the serous fluid already collected; and to strengthen the blood, and restore the tone of the constitution generally.

MEDICINE.—If the patient be young, his constitution good, and the disease has come on suddenly, it may generally be removed by strong emetics, as lobelia with bayberry, given with but little water; brisk purges; as gamboge, in small nauseating doses; or blue flag; these, properly administered, will bring away immense quantities of

water, but they must not be ventured on unless there is sufficient strength to assist their action.

The diuretics should be of the warmest and most stimulating kind, as foxglove, broom ashes, orris root, artichoke leaves, garlics, horse-radish, &c.; any thing of a cold, relaxing nature, is hurtful; for that reason, cleavers, or oil of pumpkin seeds, is improper.—Squills and juniper oil are serviceable.

After the first evacuations, if there is any prospect of overcoming the disease without tapping, we should endeavor by all means to do so, by a free use of the most bracing and stimulating tonics, joined with diuretics; for this purpose I have generally made use of the *tonic tincture*, or similar preparations, and with very good success. Horse-radish or mustard seed, with spikenard, should be applied in the form of poultices, to the feet, legs, bowels, and hands, if necessary. Much may be expected from these, and they should not be omitted.

But if the belly is largely distended with water; if the bowels have become water-soaked, obstinately costive, and their action destroyed, so that medicine or other means take no effect, *tapping* becomes necessary The method of performing this operation will be found fully described in the article on surgery.

After the waters are drawn off in this manner, by tapping, our efforts should be redoubled to prevent a new collection. Bandages should be drawn tightly round the abdomen, and worn continually. The strengthening medicines must be continued, and nothing left undone that may assist in the cure. If, however, the collection should again acquire any considerable bulk, the operation should be repeated, as often as necessary. The only ill effect to be apprehended from tapping or scarification, is mortification, which may take place in extremely debilitated cases; old ulcers, in the dropsy, also subject the patient to a greater risk of mortification.

The bowels should be kept open with clysters, if necessary.

Many excellent remedies and compounds for the cure of this disease will be found among the recipes, which the judgment of the practitioner will enable him to select.

That dropsy is an obstinate disease, no one need doubt; but that it should prove an incurable one, unless in a far gone case, we must certainly ascribe to ignorance, or neglect of the proper means. I have often, in the course of my experience, seen dropsies, as well as other diseases, which had been condemned as incurable, by physicians whose large pretensions seem to place them above shame, cured, notwithstanding all this, by the judicious use of such remedies as may be found in this book. And it may not be amiss here to remark, that botanic physicians, who understand their business, should pay little regard to these *regular* condemnations, as they are generally far from being decisive, or infallible, if the proper means are made use of to restore the patient.

PALSY.

Palsy is a loss or diminution of sense or motion, or both, in one or more parts of the body. Of all the affections called nervous, this is the most suddenly fatal. It is more or less dangerous, according to the importance of the part affected. A palsy of the heart, lungs, or any part necessary to life, is mortal. When it affects the stomach, the intestines, or the bladder, it is highly dangerous. If the face be affected, the case is bad, as it shows that the disease proceeds from the brain. When the part affected feels cold, is insensible, and wastes away, or when the judgment and memory begin to fail, there is small hope of a cure.

In some instances, the disease is confined to a particular part or set of muscles; but it more usually happens, that one entire part of the body, from the head downward, is affected. When the spinal marrow is injured, all the parts below the injury, become insensible.

Causes—A sudden shock, or any thing that prevents the regular exertion of the nervous power upon any particular muscle, or part of the body. The occasional and predisposing causes are various, as drunkenness; wounds of the brain, or spinal marrow; pressure upon the brain, or nerves; very cold or damp air; the suppression of the customary evacuations; sudden fear; want of exercise; or whatever greatly relaxes the system, as drinking much tea, or coffee.—Palsy may likewise proceed from wounds of the nerves themselves, or from the poisonous fumes of metals, as mercury, lead, arsenic, &c.

When a palsy attacks any vital part, such as the brain, heart, or lungs, it soon terminates fatally. When it arises in consequence of an apoplexy, it is more difficult of cure. Paralytic affections of the lower extremities, ensuing from injury done to the spinal marrow, by blows, and other accidents, are sometimes incurable. Partial, and sometimes, entire, palsy of the lower extremities, seem to proceed from a swelling and displacement of the womb, in females.

Symptoms—Flaccidity of the parts, a diminished sensation in, or incapacity of moving them; distortion of the muscles, tremors, wasting of the part, involuntary tears, despondency.

The Cure.—The regimen must be pointed out from the cause. In young persons of a full habit, the palsy must be treated in the same manner as the sanguine apoplexy. The patient must be bled, blistered, and his body opened by sharp clysters and purgative medicines. Electricity and friction are also proper; and if the fluids appear too vitiated, alterative and cleansing medicines should be administered.

But in old age, or when the disease proceeds from relaxation or debility, (which is generally the case,) a quite contrary course must be pursued. The diet must be solid, warm, and invigorating, seasoned with spicy and aromatic vegetables, as mustard, horse-radish, &c. The drink may be generous wines, mustard-whey, or brandy

and water. Friction with the flesh brush, a warm hand, or flannel, even to inflammation, night and morning, should not be omitted. The parts may then be bathed with oil of amber; this, with a large blister applied to the sacred bone and region of the loins, has recovered many who had lost the use of their lower extremities. Heating stimulants, as tincture of Spanish flies, a strong tincture of zanthoxylum, or cayenne pepper, galangal root, or spirits of turpentine, mustard and horse-radish, may be freely used for bathing the palsied parts. Electricity should be thoroughly tried, at least; for it has often been attended with the happiest effect.

A stimulating drink may be made of mustard seed, horse-radish, cayenne pepper, galangal, zanthoxylum, prickly ash, grains of paradise, angelica, pleurisy root, ginger, guiaiacum, or spirits of turpentine, &c. These may all be tinctured with valerian, or some other nervine, which are peculiarly proper in the palsy.

Preparations of iron, are very necessary, especially if the patient be debilitated. Cold bathing is also beneficial.

When the disease affects several different parts of the body, stimulants, both externally and internally, become more necessary.—Vomits are very beneficial in this kind of palsy, and ought to be frequently administered. Cephalic or sneezing snuff is likewise of use. If the tongue be affected, the patient may gargle his mouth frequently with brandy and mustard.

Although in every instance a dangerous disease, palsy, particularly at an advanced period of life, is sometimes removed by the occurrence of a diarrhœa, or fever. A feeling of warmth, and a slight pricking pain, as if stung by ants, in the part affected, with returning sensation and motion, are favorable symptoms.

Exercise is of the utmost importance in the palsy; but the patient must beware of cold, damp, moist air. He ought to wear flannel next his skin.

COSTIVENESS.

We do not mean to treat here of that costiveness or astriction of the bowels, which is symptomatic of other diseases; but of that infrequency of stools which sometimes happens, unconnected with any other disease.

Costiveness may proceed from drinking rough red wines or other astringent liquors; too much or too little exercise; a long use of cold, insipid food, which does not sufficiently stimulate the intestines. Sometimes it is owing to the bile not descending to the intestines, as in the jaundice; and at other times it proceeds from diseases of the bowels, as a palsy, spasms, tumors, a cold dry state of the intestines, &c.

Another cause I am compelled to add, and one which I believe produces more costiveness and inactivity of the bowels, than all other causes put together; and that is, *the use of mercury and other mineral medicines.*

Excessive costiveness is apt to occasion pains of the head, vomiting, colics, and other complaints of the bowels. It is peculiarly hurtful to hypochondriac and hysteric persons, as it generates wind and

other grievous symptoms.—Some people bear costiveness to a great degree.

Persons who are generally costive, should live upon a moistening and laxative diet; as roasted or boiled apples, pears, raisins, gruels, with currants, butter, honey, and such like. Broths, with smallage, leeks, and other soft pot herbs, are likewise proper. Mucilaginous herbs, as slippery elm, flaxseed, comfrey, and the like, are proper. Rye bread is preferable to wheat. No person troubled with costiveness should eat wheat bread alone, especially that made of fine flour.

Costiveness is increased by keeping the body too warm, and by every thing that promotes perspiration, as wearing flannel, lying too long in bed, &c. Intense thought and sedentary life, are likewise hurtful. All the secretions and excretions are promoted by moderate exercise without doors, and by a gay, cheerful and sprightly temper of mind.

The drink should be of an opening quality. All ardent spirits and austere and astringent wines, as port, and claret, ought to be avoided. Malt liquor, that is fine, and of a moderate strength, is very proper. Buttermilk, whey, and such like, are proper, and may be drank in turns, as the patient's inclination directs.

When the body cannot be kept open by laxative diet, clysters should be resorted to. The patient should procure a large syringe, and use it, with simple molasses and water, every morning, after breakfast, and make an attempt at stool, whether he has any inclination or not. By observing this regularity in going to stool, a habit is soon established, and after a time, a daily evacuation of the bowels may be procured without the use of the syringe.

Golden seal root, infused in wine or brandy, and drank as bitters, is a most excellent medicine in this complaint. It is not only very strengthening to the stomach, but is also laxative, without weakening. The following mixture has often cured costiveness: Infuse 1 oz. rhubarb, 1-2 oz. rust of iron, and 1-4 oz. of cloves, in a quart of good wine, and drink a wine glass full two or three times a day. Jellies and other warming and strengthening medicines, made slightly laxative, are appropriate.

Active physic should never be used in this complaint, unless the bowels have been so long closed as to render it absolutely necessary. A constant use of physic for costiveness is extremely foolish, as it is continually increasing the debility of the bowels, which is the cause of the disease. When physic must be taken, let it be rhubarb, which is not so weakening.

WANT OF APPETITE.

This may proceed from a foul stomach; indigestion; the want of free air and exercise; grief, fear, anxiety, or any of the depressing passions; excessive heat; the use of any thing that palls the appetite, or is hard of digestion; strong liquors, tea, tobacco, opium; *mineral medicines.*

The patient ought, if possible, to make choice of an open dry air;

to take daily exercise on horseback or in a carriage; to rise early, and avoid all intense thought, excessive heat, and great fatigue.

If want of appetite proceed from any other disease, that must be attended to; if from errors of diet, it ought to be changed. If nausea and retchings, show that the stomach is loaded with crudities, a vomit will be necessary. After this, a gentle purge or two of rhubarb will be proper. The patient ought next to use some of the stomachic bitters infused in wine, or the tonic tincture; in some cases of weak stomachs, the elixir vitriol will very soon create an appetite. If the stomach is inclined to sourness, or fermentation, lime-water, or the sal æratus and rhubarb mixture, become necessary.

A want of appetite and loathing of food is not usually an original affection, but prevails as a symptom of some other disease, such as indigestion, and is therefore to be obviated by aromatics, bitters, iron, elixir vitriol, and other acids. In spontaneous loss of appetite, when the stomach is loaded with bile, an emetic in the evening, with some kind of stomachic purgative next morning, will generally effect a cure.

HEARTBURN.

What is commonly called *heartburn*, is not a disease of that organ, but a painful sensation of heat and sourness about the left orifice, or pit, of the stomach.

It may proceed from debility of the stomach, indigestion, bile, the superabundance of acid in the stomach; corrosive steams, arising from too rapid a fermentation; drinking stale beer, wine, or any fermented liquor.

Symptoms.—Sour belchings, a hot burning pain at, and above the pit of the stomach, nausea; vomiting soon after meals, of a greasy inflammable phlegm; spasms in the stomach and bowels; the rising of water in the mouth, sickness soon after rising from bed; wind.

It is never dangerous, but extremely troublesome; if it is suffered to continue long, it may occasion head-ach, dizziness, and convulsions of all sorts.

Alkalies are peculiarly necessary in the heartburn, first making use of such evacuations as are necessary. If the stomach is weak, which is usually the case, give strengthening bitters. Absorbents, as *magnesia*, are proper: this may be taken in mint water, a large tea spoonful is the usual dose.

If wind be the cause of the complaint, carminative medicines, as pleurisy root, angelica, calamus, peppermint, &c., may be used. When the disease is spasmodic, nervines, as valerian, lady-slipper, camphor, ginger, and the like, are useful.

When the patient is troubled with hot fumes, and vomiting after meals, the sal æratus and rhubarb mixture may be depended on pretty certainly for relief. This may be tinctured with peppermint, or winter-green.

I have frequently known the heartburn cured by chewing chesnut

twigs, and swallowing the juice; and also by chewing green tea. Soap will sometimes give relief.

As pregnant women are very subject to this uneasy sensation, they should first consider whether it proceeds from any of the causes above explained; in which case the medicines prescribed will probably remove it. But if the internal sense of heat be owing to the state of pregnancy itself; if it arises from the consent between the stomach and the womb, and is not accompanied with much spitting or any acid eructations, the white of an egg, mixed with a little sugar, and water, will often afford the only relief that can be expected for some time.

PALPITATION OF THE HEART.

This is owing to plethora; to a deficiency of nervous influence, or a disproportionate influx of it; weakness of the blood, acid gas, spasms, &c.

Treatment.—The general cause, whatever it is, must be removed. To relieve the palpitation, and regulate the action of the heart and arteries, give anti-spasmodics; as stramonium, castor, camphor, valerian, &c.

NERVOUS DISEASES.

Of all the diseases incident to mankind, those of the nervous kind are the most complicated and difficult to cure. A volume would be insufficient to point out their various appearances. They imitate almost every disease, and are seldom alike in two different persons, or even the same person at different times. They are continually changing shape, and upon every fresh attack, the patient thinks he feels symptoms he never experienced before. Nor do they affect the body only; the mind likewise suffers, and is often thereby rendered extremely weak and peevish. The low spirits, timorousness, melancholy, and fickleness of temper, which generally attend nervous disorders, induce many to believe that they are entirely diseases of the mind; but this change of temper is rather a consequence than the cause of nervous diseases.

Causes.—Every thing that tends to relax or weaken the body, disposes it to nervous diseases, as indolence, profuse venery, impotence, drinking too much tea, or other weak and watery liquors warm, frequent bleeding, purging, and the use of *metalic medicines*. Whatever hurts the digestion and prevents the proper assimilation of food, has likewise this effect; as long fasting, excess in eating or drinking, the use of windy, crude or unwholesome aliments, an unfavorable posture of the body, &c.

Nervous disorders often proceed from intense application to study. Indeed few studious persons are entirely free from them. Nor is this at all to be wondered at; intense thinking not only preys upon

the spirits, but prevents the person from taking proper exercise, by which means the digestion is impaired, the nourishment prevented, the solids relaxed, and the whole mass of humors vitiated. Grief and disappointment likewise produce the same effects. Many nervous people date their disorders from the loss of a husband, a favorite child, or from some disappointment in life. In a word, whatever weakens the body, or depresses the spirits, may occasion nervous disorders; as unwholesome air, want of sleep, great fatigue, disagreeable apprehensions, anxiety, vexation, &c. Many young men, particularly in cities, by dissipating and living too fast, bring on a premature old age, attended with a long train of nervous complaints.

Symptoms.—It would be impracticable to enumerate the whole. They generally begin, however, with windy inflations or distentions of the stomach and intestines; the appetite and digestion are usually bad; yet sometimes there is an uncommon craving for food and a quick digestion. The food often turns sour on the stomach, and the patient is troubled with vomiting of clear water, tough phlegm, or a blackish coloured liquor resembling the grounds of coffee. Excruciating pains are often felt about the navel, attended with a rumbling or murmuring noise in the bowels. The body is sometimes loose, but more commonly bound, which occasions a retention of wind and great uneasiness.

The urine is very irregular, sometimes being small in quantity, and at other times very copious and quite clear. There is a great tightness of the breast, with difficulty of breathing; violent palpitations of the heart; sudden flushings of heat in various parts of the body; and at other times a sense of cold as if water were poured on them; flying pains in the back and limbs; pains in the back and belly, resembling those of gravel; the pulse very variable; yawning, hiccup, frequent sighing, and a sense of suffocation as if from a ball or lump in the throat; alternate fits of crying and convulsive laughing; the sleep unsound, and seldom refreshing; nightmare.

As the disease increases, the patient is molested with dizziness, fainting, head-achs, cramps, and fixed pains in the various parts of the body; the eyes are clouded, and often affected with pain and dryness; there is a noise in the ears, and often a dulness of hearing; in short the whole animal functions are impaired, the mind is disturbed on the most trivial occasions, and is hurried into the most perverse commotions, inquietudes, terror, sadness, anger, diffidence, &c. The patient is apt to entertain wild imaginations and extravagant fancies; the memory becomes weak, and the judgment fails.

Nothing is more characteristic of this disease than a constant dread of death. This renders those unhappy persons who labor under it peevish, fickle, impatient, and apt to run from one physician to another; which is the reason why they seldom reap any benefit from medicine, as they have not sufficient resolution, to persist in any one course till it has come to produce its proper effects. They are likewise apt to imagine that they labor under diseases from which they are quite free; and are very angry if any one attempts to set them right, or laugh them out of their ridiculous notions.

Regimen.—Persons afflicted with nervous diseases ought never to fast long. Their food should be solid and nourishing, but of easy digestion; such as milk, meat broths, particularly of pork; strong soups, jellies, eggs; all sorts of shell fish, as lobsters, crabs, oysters, &c., flat-fish, eels; every species of wild fowls; any animal food taken in large quantities and often repeated. He should abstain from vegetables, fruit, and malt liquor.

Heavy sauces are hurtful. All excess should be carefully avoided. They ought never to eat more at a time than they can easily digest; heavy suppers are to be avoided. If they feel themselves faint and weak between meals, they ought to eat a bit of bread, and drink a glass of wine. Though wine in excess enfeebles the body, yet taken in moderation, it strengthens the stomach and promotes digestion. Every thing that is windy and hard of digestion must be avoided. All weak and warm liquors are hurtful; as tea, coffee, punch, &c. Above all things. drams are to be avoided. Whatever immediate ease the patient may feel from the use of ardent spirits, they are sure to aggravate the malady and prove certain poisons at last.

Exercise in nervous disorders is superior to all medicines. Riding on horseback is far the best, as it gives motion to the whole body, without fatiguing it; strengthens the blood and raises the spirits. This should never be neglected, if the patient is able to bear it. He should take a two or three hours' jaunt every morning. Walking, however, agrees better with some persons, and others may be more benefitted by riding in a carriage. Every one ought to use that which he finds most beneficial. Sea voyages, also have an excellent effect. Even change of place, and sight of new objects, by diverting the mind, have a great tendency to remove these complaints. For this reason, a long journey is of much more advantage than a short one.

A cool dry air, is proper, as it braces and invigorates the whole body. Few things tend more to relax and enervate than hot air, especially that which is rendered so by great fires, or stoves. But when the stomach or bowels are weak, the body ought to be well guarded against cold, especially in winter, by wearing flannel next the skin. This will keep up an equal perspiration, and defend the alimentary canal from many impressions to which it would otherwise be subject upon every sudden change from warm to cold weather. Rubbing the body frequently with a flesh brush or coarse cloth, is likewise beneficial. Persons who have weak nerves ought to rise early, and take exercise before breakfast, such as digging in a garden, than which nothing can be better: lying too long in bed cannot fail to relax the nerves. They ought likewise to be diverted, and kept as easy and cheerful as possible. There is not any thing which hurts the nervous system, or weakens the digestive powers, more than fear, grief, or anxiety.

That any disease should require such nice precautions, both of mind and body, may appear rather frivolous to the hardy farmer, or to the man who labors out of doors, bodily, for his living. But although they are unaccustomed to such complaints, they do exist, nevertheless, and to a great extent, in cities, particularly among those who have exhausted their constitutions in dissipation. The phy-

sician must if possible, gain the confidence of the hypochondriac patient, for without it, he may endeavor, but in vain, to relieve him. If necessary, he must indulge him in his whims, however ridiculous, and pretend to agree with him in his opinion about his complaints, use stratagem, or any way to keep his mind at ease, raise his spirits, and keep him in the use of medicine long enough to have it take effect.

MEDICINE.—When the patient is costive, he ought to make use of injections, as directed in costiveness. This although it may at first appear irksome, is attended with little trouble and great benefit. If purgatives become necessary, however, they should be of the mildest kind, as rhubarb, or some laxative and strengthening preparation. The golden seal root, being both of a stomachic and laxative quality, is extremely appropriate in this case.

Warming, stimulating, strengthening and nervine medicines are necessary, in hypochondriac complaints. When the digestion is bad and the stomach is relaxed or weak, the following bitters may be used with advantage, first giving an emetic, if it appears necessary:

Take of columbo root an ounce; gentian root, orange peel, and caraway seeds, each half an ounce, and valerian, or lady slipper, an ounce: let all these ingredients be bruised in a mortar, and infused in a bottle of brandy, rum, or cider brandy, for the space of five or six days. A table spoonful may be drank in a glass of water, an hour before meals.

Or, the following, which will not disappoint expectation:

Balm of gilead buds, black cherry bark, columbo root, dog-wood or box-wood bark, or blossoms, unicorn root, and valerian, all to be boiled in water down to a syrup, strained and sweetened, with sufficient spirits added to preserve it: dose, as much as the stomach will bear, two or three times a day.

Or, an infusion of horse radish, valerian tea, and ginger; or the "balsam of life;" the *tonic tincture*, the clove jelly, iron and myrrh pills, &c. The valerian, or some similar fœtid anti-spasmodic, is highly necessary in this disorder, and should form a part of all medicinal compounds prescribed for it.

The following articles are suitable for this disease, and may be compounded according to the choice of the physician; valerian, lady slipper, angelica, golden seal, cloves, unicorn, horse-radish, ginger, gentian, calamus, pleurisy root, whitewood bark, colombo, caraway, balm of gilead, iron, myrrh, cayenne, skunk cabbage, crawley, castor, lobelia, motherwort, dogwood, zanthoxylum, cohush, galangal, &c. Many excellent strengthening, and stimulating preparations will be found among the recipes, applicable to hypochrondriac complaints.

Few things tend more to strengthen the nervous system than cold bathing. This practice, if duly persisted in, will produce very extraordinary effects; but when the liver or other viscera are obstructed, or otherwise unsound, the cold bath is improper. It is therefore to be used with caution. It will be sufficient, especially for persons of a spare habit, to go into the cold bath three or four times a week. If the patient be weakened by it, or feels chilly for a long time after coming out of it, it is improper.

In patients afflicted with wind, in addition to the pleurisy root, I have always observed the greatest benefit from the elixir of vitriol. It may be taken in quantity of fifteen, twenty, or thirty drops, twice or thrice a day in a glass of water. This both expels wind, strengthens the stomach, and promotes digestion.

Opiates are generally extolled in these maladies; but as they only palliate the symptoms, and generally afterwards increase the disease, the patient should be extremely sparing in the use of them, lest habit should render them at last absolutely necessary.

It would be an easy matter to enumerate many medicines which have been extolled for relieving nervous disorders; but whoever wishes for a thorough cure, must expect it from regimen alone; we shall therefore omit mentioning more medicines, and again recommend the strictest attention to *diet, air, exercise, and amusements.*

MELANCHOLY.

Melancholy is that state of alienation or weakness of mind, which renders people incapable of enjoying the pleasures, or performing the duties of life. It is a degree of insanity, and often terminates in absolute madness.

Causes.—It may proceed from an hereditary disposition; intense thinking, especially where the mind is long occupied with one object; violent passions or affections of the mind, as love, fear, joy, grief, pride, and such like. It may also be occasioned by excessive venery, impotence; narcotic and stupefactive poisons; a sedentary life; solitude; the suppression of customary evacuations; acute fevers; or other diseases. Violent anger will change melancholy into madness; and excessive cold, especially of the lower extremities, will force the blood into the brain, and produce all the symptoms of madness. It may also proceed from a callous state of the integuments of the brain, or a dryness of the brain itself. To all which we may add, gloomy and mistaken notions of religion.

Symptoms.—When persons begin to be melancholy, they are dull; dejected; watchful; fond of solitude; fretful and fickle; captious and inquisitive: sometimes niggardly and at other times prodigal. The body is generally bound, because the nervous power is principally expended in the head; the urine thin and small in quantity: the stomach and bowels inflated with wind; the complexion pale; the pulse slow and weak. The functions of the mind are also greatly perverted, insomuch that the patient imagines himself dead, or changed into some other animal. Some have imagined their bodies were made of glass, or other brittle substances, and were afraid to move lest they should be broken to pieces. The unhappy patient, in this case, unless carefully watched, is apt to put an end to his own miserable life.

When this disease is owing to any bodily disorder, it is easier cured than when it proceeds from affections of the mind alone. A

discharge of blood from the nose, looseness, scabby eruptions, the bleeding piles, or the menses, sometimes carry off this disease.

THE CURE.—The diet should consist chiefly of vegetables, of a cooling and opening quality. All kinds of fruits that are wholesome may be eaten with advantage. The most proper drink is water, whey, or very small beer. If honey agrees with the patient, it may be eaten freely, or his drink may be sweetened with it. Infusions of balm leaves, pennyroyal, the roots of valerian, may be drank freely, either by themselves or sweetened with honey, as the patient shall choose.

The patient ought to take as much exercise in the open air as he can bear. This helps to dissolve the viscid humors, it removes obstructions, promotes perspiration and all the other secretions. Every kind of madness is attended with a diminished perspiration; all means ought therefore to be used to promote that necessary and salutary discharge. Nothing can have a more direct tendency to increase the disease than confining the patient to a close apartment. Were he forced to ride or walk a certain number of miles every day it would tend greatly to alleviate his disorder; but it would have a still better effect if he were obliged to labor on a piece of ground. By digging, hoeing, planting, sowing, &c., both the body and mind would be exercised. A long journey, especially towards a warmer climate, and with agreeable companions, has often very happy effects. A plan of this kind, with a strict attention to diet, is a much more rational method of cure, than confining the patient within doors and plying him with medicines.

MEDICINE.—In the cure of this disease particular attention should be paid to the mind. When the patient is in a low state, his mind ought to be soothed and diverted with a variety of amusements, as entertaining stories, pastimes, music, &c. Nothing can remove diseases of the mind so effectually as applications to the mind itself, the most efficacious of which is music. The patient's company ought likewise to consist of such persons as are agreeable to him. People in this state are apt to conceive unaccountable aversions against particular persons; and the very sight of such persons is sufficient to distract their minds, and throw them into the utmost perturbation. In all kinds of madness it is better to sooth and calm the mind than to ruffle it by contradiction.

When the patient is high, cool his head and warm his extremities, and if necessary, give an emetic and physic. The *anodyne wash*, applied to the head has a very soothing effect, when the patient is excited. The vomits must be pretty strong, or they will not operate. The lobelia is of great benefit in madness. Valerian, camphor, castor, and musk have been used in this case with great advantage. Whatever increases the secretion of urine or promotes perspiration, has a tendency to remove this disease. Both these secretions may be increased by the use of foxglove, balsam of life, wild turnip, fever root, &c.

As it is very dfficult to induce patients in this disease to take medicines, outward applications may sometimes be of benefit; as blis-

ters, issues, setons and warm bathing. The most proper place for a seton is between the shoulder-blades; and it ought to be placed upwards and downwards, in the direction of the spine.

Madness or delirium which proceeds from mere weakness requires a different treatment. This must be removed by nourishing diet, exercise proportioned to the patient's strength, and cordial medicines. All evacuations are carefully to be avoided. The patient may take frequently a glass of good wine in which a little colombo root has been infused.

ST. VITUS' DANCE.

This disease is an involuntary, yet irresistible motion of the several muscles. The patient uses many ridiculous and antic gestures; and what is very singular, those muscles only are affected which are destined for spontaneous motion, for the heart, diaphragm, lungs and stomach are never injured by this whimsical disorder. It generally attacks young people, from the eighth year of their age to the time of puberty.

Causes.—An unequal distribution of the nervous influence. This is often owing to an obstructed menstruation, green sickness, acid gas, worms, blows, weakness of solids.

Symptoms.—The first symptom is generally a slight lameness of one leg, which the patient drags a little and seems to have lost the power of regulating its motion. The arms next become affected, and are thrown into various contortions, which deprive persons affected with this disease of the power of feeding themselves, and their awkward gesticulations in attempting to bring articles of food towards their mouth, appear ridiculous. One side of the body is generally more affected than the other. The tongue is so much affected as to render articulation nearly unintelligible. If the disease continue long, it materially injures the constitution, sleep becomes disturbed, or is in a great measure prevented, the mental faculties are impaired, and revert to childishness; pain is often felt in the stomach, the appetite for food is extremely irregular, being occasionally ravenous, the countenance appears pale and languid, and the body and limbs are much emaciated.

It is most common to females before puberty; menstruation generally cures it. I have seen many cases of this sort; but never one that was difficult of cure. When of long continuance, it sometimes degenerates into an epilepsy.

The Cure.—As *weakness of the solids* is an inseparable concomitant of this distemper, the regimen must be adapted to it; that is, solid and nourishing, with proper exercise.

Begin the cure with a vomit, which should be repeated twice or thrice a week, till the patient is recovered. A purge may also be administered occasionally, according to circumstances. Some recommend continual heavy purges as a remedy. This, however, does not appear to be the safest or most efficacious method.

If worms are suspected, vermifuges may be given.

Chalybeates, as the *tonic tincture*, iron and myrrh pills, &c., together with strengthening bitters, are proper for a general medicine. Nervines or anti-spasmodics must not be neglected; as tincture of valerian, lady-slipper, castor, assafœtida, skunk-cabbage, &c., some one of which should be taken continually. Alkalies, balsams, and aromatics, may also become beneficial. Ginger, horse-radish, and pleurisy root, are also extremely applicable.

The cold bath is very serviceable in this disorder.

CRAMP IN THE STOMACH.

This disorder often seizes people suddenly, is very dangerous, and requires immediate assistance. It is most incident to persons in the decline of life, especially the nervous, gouty, hysteric, hypochondriac and intemperate.

If the patient has an inclination to vomit, give him draughts of warm water, or weak camomile tea, to cleanse his stomach. After this, if he has been costive, a laxative clyster may be given. He ought then to take laudanum. The best way of administering this is in a clyster; sixty or seventy drops may be administered in a clyster of warm water. This is more certain than laudanum given by the mouth, which is often vomited, and increases the spasms. Ten or fifteen drops of the oil of pumpkin seeds, or other similar relaxing medicines, may be given by the mouth. The lobelia emetic is recommended by some to be very effectual, giving quick relief. The high cranberry bark, also called cramp bark, in tea, is very good in all kinds of cramps.

If the pain and cramp return with great violence, after the effects of the anodyne clysters are over, another with an equal or larger quantity of opium may be given; and every four or five hours, ten or twelve grains of musk, or other anti-spasmodics, may be given. In the meantime, the stomach ought to be fomented with cloths dipped in warm water; or bladders filled with warm milk and water, should be constantly applied to it.

In very violent and lasting pains of the stomach, or if they proceed from stoppage of the menses, the feet and legs should be bathed in warm water, and draughts applied. If they be owing to the gout, recourse must be had to spirits and cordials.

SARDONIC LAUGH.

This disease is principally characterized by a fit of laughter, arising without any evident cause, and often continuing in a very violent degree for three or four nights, so far as to prevent the patient from sleeping. By its duration in this way, great debility is induced, accompanied with frequency of pulse, and other febrile symptoms; at which time it either proves fatal by its violence, or ceases spontaneously.

For the removal of this disease, anti-spasmodics, and diaphoretics, seem to be most proper.

THE NIGHT-MARE.

In this disease the patient, in time of sleep, imagines he feels an uncommon oppression of weight about his breast or stomach, which he can by no means shake off. He groans and sometimes cries out, though oftener he attempts to speak in vain. Sometimes he imagines himself engaged with an enemy, and in danger of being killed, attempts to run away, but finds he cannot. Sometimes he fancies himself in a house that is on fire, or that he is in danger of being drowned in a river. He often thinks he is falling over a precipice, and the dread of being dashed to pieces suddenly awakes him.

This disorder may proceed from a stagnation of blood in the brain, lungs, &c. But it is rather a nervous affection, and arises chiefly from indigestion. Hence we find that persons of weak nerves, who lead a sedentary life, and live full, are most commonly afflicted with the night-mare. Nothing tends to produce this more than heavy suppers, especially when eaten late, or the patient goes to bed soon after. Wind is likewise a very frequent cause of this disease; for which reason, those afflicted with it ought to avoid all windy food. Sailors, hypochondriacs, and pregnant women are most liable to it.

The night-mare is frequently occasioned by eating a full meal of animal food, and drinking freely of fermented liquors, after long fasting and bodily fatigue, by which the whole system is debilitated, and the digestive functions impaired.

As persons afflicted with the night-mare, generally moan, or make some noise in the fit, they should be shaken, waked, or spoken to, as the uneasiness generally goes off as soon as the patient is awake. A dram of brandy taken at bed time will usually prevent the attack; but it is a bad custom, and in time looses its effect. The patient should therefore eat light suppers, and take such other precautionary care, as may be necessary.

The following simple method of preventing the night-mare, was told to me by an old man, who said it had relieved him for a great many years entirely: this is, to stick a needle, or some sharp pointed instrument in his night shirt, so that the point of it will touch the skin upon the breast, thereby keeping up a sense of feeling in the part; and when this is effected, the night-mare is prevented.

When the night-mare goes off, as is frequently the case, without the patient awakening, strange aberrations of the mind are occasionally produced, which give origin to reputed visions, and supernatural visitations, even among people of superior intellectual cultivation. The degree of consciousness during a paroxysm of night-mare, is so much greater than ever happens in a dream, that the person who has had a vision of this kind, cannot easily bring himself to acknowledge the deceit, unless he awakes, or is aroused from his paroxysm, and discovers some incongruity in respect to the time and place, which proves the transaction to be an illusion.

Persons who are young and full of blood, if troubled with the night-mare, ought to take a purge frequently, use a spare diet, and take exercise in the open air.

SWOONING OR FAINTING.

Persons of weak nerves, or delicate constitutions, are liable to swoonings, or fainting fits. These, indeed, are seldom dangerous when duly attended to; but when wholly neglected, or improperly treated, they often prove hurtful, and sometimes fatal.

The general causes of swoonings are, sudden transitions from cold to heat; breathing air that is dreprived of its oxygen, or proper spring or elasticity; great fatigue; excessive weakness; loss of blood; long fasting; fear, grief, and other violent passions or affections of the mind; sudden fright, &c.

It is well known, that persons who have been long exposed to cold, often faint, or fall into a swoon, upon coming into a warm house, especially if they drink hot liquor, or sit before a large fire. This might easily be prevented by people taking care not to go into a warm room immediately after they have been exposed to the cold air, to approach the fire gradually, and not to eat or drink any thing hot, till the body has been gradually brought into a warm temperature.

When any one, in consequence of neglecting these precautions falls into a swoon, he ought immediately to be removed to a colder apartment, to have ligatures applied above his knees and elbows, and to have his hands and face sprinkled with vinegar or cold water. He should likewise be made to smell vinegar, and should have a spoonful or two of water, if he can swallow, with about a third part of vinegar mixed with it, poured into his mouth. If these should not remove the complaint, it may be necessary to bleed, and afterwards to give him a clyster.

As the air that is breathed frequently loses its elasticity and spring, it is no wonder if persons who respire in it, often fall into a swoon, or fainting fit. They are in this case deprived of the very principle of life. Hence it is, that fainting fits are so frequent in all crowded assemblies, particularly in hot seasons. Such fits, however, must be considered as a kind of temporary death; and to the weak and delicate, they sometimes prove fatal. They ought therefore with the utmost care to be guarded against. Let churches and other places of public resort, be large and well ventilated.

A person who faints in such a situation, ought immediately to be carried into the open air; his temples should be rubbed with strong vinegar, or brandy, and volatile spirits, or salts, held to his nose.—He should be laid upon his back, with his head low, and have a little wine, or some other cordial, as soon as he is able to swallow it, poured into his mouth. If the person has been subject to hysteric fits, castor or assafœtida should be applied to the nose, or burnt feathers, horn, or leather, &c.

When fainting proceeds from mere weakness or exhaustion, which is often the case after great fatigue, long fasting, loss of blood, or the like, the patient must be supported with generous cordials, as jellies, wine, spirituous liquors, and the like. These, however, must be given in very small quantities at first, and increased as the patient is able to bear them. He ought to be allowed to lie quite still and easy

upon his back, with his head low, and should have fresh air admitted into his chamber. His food should consist of gruel with wine, new milk, and other things of a light and cordial nature. These things are to be given out of the fit. All that can be done in the fit is, to let him smell volatiles, and rub his temples with warm brandy or vinegar.

In fainting fits that proceed from fear, grief, or other violent passions or affections of the mind, the patient must be very cautiously managed. He should be suffered to remain at rest, and only made to smell some vinegar. After he is come to himself, he may drink freely of warm lemonade, or balm, or mint tea. It will likewise be proper, if the fainting fit have been long and severe, to cleanse the bowels by throwing in an emollient clyster.

FLATULENCY, OR WIND.

Flatulencies, are, of all disorders, the most common, and have, perhaps, the least attention paid to them, notwithstanding that few persons are free from some disagreeable circumstances owing to wind. All nervous patients, without exception, are afflicted with wind in their stomach and bowels, which arise from the want of tone and vigor in these organs. Crude flatulent aliment, as green peas, beans, cabbages, and the like, may increase this complaint; but strong and healthy people are seldom troubled with wind, unless they overload their stomachs, or drink liquors in a fermenting state, and consequently full of elastic air. While therefore the wind proceeds from the aliments, the cause which makes air separate from them in such quantity as to occasion complaints, is almost always a fault of the bowels themselves, which are too weak, either to prevent the production of elastic air, or to expel it after it is produced.

To relieve this complaint, such medicines ought to be used as have a tendency to expel wind, and by strengthening the alimentary canal, to prevent its being produced there.

Symptoms.—Breaking wind, upwards and downwards, belchings, pain in the stomach, rumbling noise in the bowels, loss of appetite, heartburn, sour breath, sensation of pent up wind, bad taste in the mouth, swelling at the pit of the stomach, swelling of the abdomen on the right side, difficulty of breathing, head-ach, sensation of fulness after eating, nausea, obstructed bile, costiveness, passing of worms or slime, spasms of the urinary vessels, obstruction of the menses, and sometimes diarrhœa. It is an almost inseparable concomitant of all bilious and gravelly complaints.

The Cure —The predominant acid in the stomach is to be corrected and destroyed by emetics and alkalies; the wind is to be expelled by proper carminatives, nervines, &c.; the bowels to be kept open by clysters, and laxatives; and the stomach and bowels to be strengthened by bitters, tonics, &c. A milk diet, morning and evening, is very advisable; animal food and spirits diluted with water, may be used safely, and the warmer any liquid is drank the better. Absti-

nence from fruit, vegetables, malt and other fermenting liquors is indispensably necessary.

The medicines I have found particularly efficacious in expelling wind, are, first pleurisy root, in powder, a tea spoonful every twenty minutes till relieved, and afterwards continued as occasion may require. Bayberry, angelica, sweet flag, ginger, cayenne pepper, caraway, galangal, valerian, crawley, horse-radish, mustard, clove jelly, peppermint, white wood, &c.

Afterwards, or at the same time, give tonics, and strengthening bitters, which may be of a slightly laxative nature, but not weakening; if the bowels cannot be kept regular with this, clysters must be used.

Chalybeates, as the *tonic tincture*, together with the iron and myrrh pills, are also very serviceable.

LOW SPIRITS.

This disease is also known by the name of *vapors*. It is a certain state of the mind, accompanied with dyspepsia, in which the greatest evils are apprehended upon the slightest grounds, and the worst consequences imagined from any unusual feeling, even of the most trifling kind; and as regards these apprehensions and feelings, there is always the most obstinate belief and persuasion.

All who have weak nerves are subject to low spirits, in a greater or less degree. If carminatives, or bitters, are indicated, give them; and in addition, generous diet, the cold bath, exercise and amusements, are the most likely means of removing this complaint.

If it proceeds from the suppression of evacuations, or any other disease, appropriate remedies must be used.

HYSTERIC AFFECTIONS.

These likewise belong to the numerous tribe of nervous diseases. Women of a delicate habit, whose stomach and intestines are relaxed, and whose nervous system is extremely sensible, are most subject to hysteric complaints. In such persons a hysteric fit may be brought on by irritation of the nerves of the stomach or intestines, by wind, acrid humor, or the like. A sudden suppression of the menses often gives rise to hysteric fits. They may likewise be excited by violent passions or affections of the mind, as grief, fear, anger, or great disappointments. It appears under such various shapes, imitates so many other diseases, and is attended with such a variety of symptoms, that it is difficult to give a just character or definition of it; and it is only by taking the aggregate of its appearances, that a proper idea of it can be conveyed to others.

Sometimes the hysteric fit resembles a swoon or fainting fit, during which the patient lies as in a sleep, only the breathing is so low as scarcely to be perceived. At other times the patient is affected with catchings and strong convulsions. The symptoms which precede hysteric fits, are likewise various in different persons. Sometimes

the fit comes on with coldness of the extremities, yawning and stretching, lowness of spirits, oppression and anxiety. At other times the approach of the fit is foretold by a feeling as if there was a ball in the belly, which gradually rises towards the stomach, where it occasions inflation, sickness, and sometimes vomiting; afterwards it rises into the throat, and occasions a degree of suffocation, to which quick breathing, palpitation of the heart, giddiness of the head, dimness of the sight, loss of hearing, with convulsive motions of the extremities and other parts of the body, succeed. The hysteric paroxysm is often introduced by an immoderate fit of laughing, and sometimes it goes off by crying. Indecent expressions and actions frequently accompany the fits.

If the patient has been long troubled with them, they often end in a perpetual and causeless timidity; madness, or all the horrors of the hypochondriacal affection, to which this disorder is very similar. It is by no means dangerous, or difficult.

THE CURE.—If the stomach appears to be loaded, emetics, frequently repeated, succeed wonderfully. Lobelia is very suitable, as it is also anti-spasmodic. All other evacuations are hurtful.

In the fit, give opium and castor, two grains of the former and four of the latter. This may be repeated in an hour, or more, according to the urgency of the case. Also, endeavor to rouse the patient by strong smells, as burnt feathers, assafœtida, or hartshorn, held to the nose. Hot bricks may also be applied to the soles of the feet, and the legs, arms and belly may be rubbed with a warm cloth; or put the feet and legs in warm water. In case of costiveness, a clyster, with assafœtida, will be proper; and as soon as the patient can swallow, the *mother's cordial*, or a decoction of cramp or cranberry bark, or other opening and relaxing drink should be given.

The radical cure of this disorder will be best attempted when the patient is out of the fit, and most free from them. For this purpose, a milk and vegetable diet should be made use of, and properly persisted in. Tonics, bitters, iron, and anti-spasmodics, are indicated. If the patient is much subject to cramps, or even if not, the *mother's cordial* should be used continually as occasion requires. Ginger, an eighth of an ounce, taken night and morning, is very beneficial. Cold bathing, and every thing that braces and strengthens the nerves and whole system, is useful; but lying long in bed, or whatever relaxes the system, is hurtful. The mind should be kept cheerful and easy, if possible, and always engaged in some interesting pursuit.

If the head is much affected with pain, the *anodyne wash*, or some similar soothing application, is necessary.

GOUT.

The gout is a chronic disease, most commonly affecting the feet and hands. Excess and idleness are the true sources from whence it originally sprung, and all who would avoid it must be active and temperate.

Though idleness and intemperance are the principal causes of the

gout, yet many other things may contribute to bring on the disorder in those who are not, and to induce a paroxysm in those who are subject to it; as intense study; excess of venery; too free a use of acidulated liquor; night watching; grief or uneasiness of mind; an obstruction or defect of any of the customary discharges, as the menses, sweating of the feet, perspiration, &c.

Symptoms.—A fit of the gout is generally preceded by indigestion, drowsiness, eructation, a slight head-ach, sickness and sometimes vomiting. The patient complains of weariness and dejection of spirits, and has often a pain in the limbs, with a sensation as if wind or cold water were passing down the thigh. The appetite is often remarkably keen a day or too before the fits, and there is a slight pain in passing the urine, and frequently an involuntary shedding of tears. Sometimes these symptoms are much more violent, especially upon the approach of the fit; and it has been observed, that as is the fever which ushers in the gout, so will the fit be; if the fever be short and sharp, the fit will be so likewise; if it be feeble, long and lingering, the fit will be such also. But this observation can hold only with respect to very regular fits of the gout.

The regular gout generally makes its attack in the spring, or beginning of winter, in the following manner: About two or three in the morning, the patient is seized with a pain in his great toe, sometimes in the heel, and at other times in the calf of the leg. This pain is accompanied with shivering and some degree of fever. Afterwards the pain increases, and fixing among the small bones of the foot, the patient feels all the different kinds of torture, as if the part were stretched, burnt, squeezed, gnawed, or torn in pieces. The part at length becomes exquisitely sensible, that the patient cannot bear to have it touched, or even suffer any person to walk across the room.

The patient generally is in exquisite torture for twenty-four hours, from the time of the coming on of the fit, (unless relieved); he then becomes easier, the part begins to swell, appears red, and is covered with a little moisture. Towards morning he drops asleep, and generally falls into a gentle breathing sweat. This terminates the first paroxysm, a number of which constitutes a fit of the gout; which is longer or shorter, according to the patient's age, strength, the season of the year, and the disposition of the body to the disease.

The patient is always worse towards night, and easier in the morning. The paroxysms, however, generally grow milder every day, till at length the disease is carried off by perspiration, urine, and the other evacuations. In some patients this happens in a few days; in others, it requires weeks, and in some, months, to finish the fit. Those whom age and frequent fits of the gout have greatly debilitated, seldom get free from it before the approach of summer, and sometimes not till it be pretty far advanced.

If hereditary it is most difficult to relieve. It is generally supposed to be incurable, as all disorders are said to be which we know not *how* to cure. The fits may be rendered milder, and perhaps totally prevented, by pursuing the following method. It has succeeded in the removal of many inveterate gouts, though they were of long standing, and had been every year increased.

THE CURE.—Let the patient live wholly on animal food, or use a milk diet, and for change take meat broths. He may drink plentifully too of milk whey; but must abstain from all vegetables, claret and malt liquors; spirits diluted with water will not hurt him. Exercise is absolutely necessary, and too much cannot be taken; nor can it be too often repeated, if it does not proceed to fatigue. The mind should be kept as calm and composed as possible; amusement, and a little dissipation of thought is necessary. Those who have been accustomed to live high, however, must not retrench too suddenly.

In the fit, as the most efficacious means of discharging the gouty matter is by perspiration, which seems to be the object of Nature, the foot, or affected part, should be bathed with the *anodyne wash*, warmed, gently at first, and afterwards rubbing harder, continuing to increase the friction for the space of half an hour, by which time the patient will bear it very well, and feel greatly relieved of pain. He should then get into bed, and have the spirit vapor bath conveyed to the gouty part, wherever it is, by tubes. This should be applied as warm as the patient can bear it, and kept up an hour or more. This will create a profuse perspiration from the swelled part, which, by throwing out the gouty particles, gives astonishing relief. I have often witnessed cases where, with this treatment, the patient has been transported from the most racking tortures of this disorder into a sweet sleep in the course of two hours.

While the above treatment is in operation, the patient should take internally, diaphoretics, carminatives and anodynes, as the *fever powders*, (which are of singular service, relaxing the system and giving ease,) or other diaphoretics; strong cordials and spirits; saffron and other stimulants, to guard the stomach.

If the paroxysm should threaten a return, let this treatment be repeated, as often as necessary; in the meantime applying the *anodyne wash* freely wherever there is pain. When the pain is very great, and the patient restive, he may take from thirty to forty drops of laudanum, more or less, according to the violence of the symptoms. This may be taken at bed time.

After the fit is over the patient ought to take a gentle dose of rhubarb, or some warm stomachic purge. He should also drink a weak infusion of stomachic bitters, in wine or ale, as the columbo root, golden seal, Virginia snake root, with cinnamon, sweet flag, &c. The diet at this time should be light but nourishing, and gentle exercise ought to be taken on horseback or in a carriage.

All cold external applications that repel the matter, are to be avoided as death. They do not cure the disease, but remove it from a safer to a more dangerous part of the body, where it often proves fatal. A fit of the gout is to be considered as Nature's method of removing something that might prove destructive to the body, and all we can do with safety, is to promote her intentions and assist her in expelling the enemy in her own way. Evacuations by stool, &c. are to be used with extreme caution; they do not remove the cause of the disease; and sometimes by weakening the patient, prolong the fit; but where the constitution is able to bear it, it will be of use to keep the body gently open by diet or very mild laxative medicines.

Out of the fit, it is in the patient's power to do many things towards removing the cause, and of course preventing a return of the disorder. This may be attempted both by medicine and exercise. The medicine should be of a cleansing, detergent and stimulating quality; as the *anti-mercurial*, or other cleansing syrups. To these may be added, alkalies and tonics, as necessary. These medicines must be persevered in for a considerable time, to effect the necessary change in the system. At best, it is a work of time to entirely eradicate this disease; and I believe it has been the want of perseverance in the use of the proper remedies, that has caused the generally settled opinion that the gout is incurable.

In addition to the medical treatment, and which is not inferior in consequence, two other things are very necessary to be observed, viz.:—In the first place, *universal temperance*. In the next place, *sufficient exercise*. By this we do not mean sauntering about in an indolent manner, but labor, sweat, and toil. These only can render the humors wholesome, and keep them so. Going early to bed, and rising betimes, are also of great importance. It is likewise proper to avoid night studies, and intense thinking. The supper should be light, and taken early. The use of milk, gradually increased till it becomes the principal article of diet, is particularly recommended. All strong liquors, and especially astringent wines, and sour punch, are to be avoided.

It would be well, also, to take a course of stomachic bitters every spring and autumn, as tansy, colombo, camomile, burdock, prince's pine, &c.

When, in a regular fit of the gout, it leaves the extremities, and falls on some of the internal parts, proper applications to recal and fix it become absolutely necessary. When the gout affects the head, the pain in the joints ceases and the swelling disappears; while either severe headach, drowsiness, trembling, giddiness, convulsions or delirium come on. When it seizes the lungs, great oppression, with cough and difficulty of breathing ensue. If it attacks the stomach, extreme sickness, vomiting, anxiety, and pain in the epigastric region, and total loss of strength will succeed.

When the gout attacks the head or lungs, every method must be taken to fix it in the feet. They must be frequently bathed in warm water, and hot, acrid poultices applied to the soles; as horse-radish, mustard, poke root, &c. Blisters ought likewise to be applied to the ancles or calves of the legs. Warm stomachic purges may likewise be used. The most effectual means, however, which I have seen used for drawing the gouty matter from the body into the feet, is the *spirit vapor bath*, applied to the feet and legs only, the rest of the body being covered so tightly as to prevent the vapor from having access to it.

If it attacks the stomach, with a sense of cold, the most warm cordials and carminatives are necessary, as strong wine boiled up with spices, saffron, cayenne, zanthoxylum, &c. and even brandy or other spirits in large quantities, peppermint, &c The patient should be kept in his bed, and the means recommended above should be used for driving the gout back to the feet. A perspiration should also be promoted by the *fever powders*, or warm teas

and liquors. If there is an inclination to vomit, it should be promoted by warm camomile tea, &c. Opiates, joined with anti-spasmodics, and aromatics, may be of service.

When the gout attacks the kidneys, and imitates gravel pains, the patient ought to drink freely of a decoction of marsh-mallows, or such like, and have the parts bathed or fomented with warm water, or the *anodyne wash*, hops, &c. Laudanum may be taken, also, and a clyster given. The means recommended for drawing the gout into the feet, should also be used.

When calculi, or a hard chalky substance has collected in any quantity in the joints, obstructing their motion, the gout *is*, probably, incurable.

RHEUMATISM.

This disease has often a resemblance to the gout. It generally attacks the joints with exquisite pain, and is sometimes attended with inflammation and swelling. It is most common in the spring, and fall. It is usually distinguished into *acute* and *chronic*; or the rheumatism with and without a fever.

Causes.—The causes of a rheumatism are frequently the same as those of an inflammatory fever, viz., an obstructed perspiration, the immoderate use of strong liquors, and the like. Sudden changes of weather from heat to cold; working in water, wet feet, lying on damp ground, travelling in the night, &c., also produce it.

The rheumatism may likewise be occasioned by excessive evacuations. It is often the effect of chronic diseases, which vitiate the humors, as the scurvy, scrofula, venereal, agues, &c. Acrid serum, elastic air, and a deficiency of vital heat, are also a frequent cause.

Symptoms.—The *acute* rheumatism commonly begins with weariness, shivering, a quick pulse, restlessness, thirst, and other symptoms of fever. Afterwards, the patient complains of flying pains, which are increased by the least motion. These at length fix in the joints, which are often affected with swelling and inflammation.

The Cure.—Use the spirit vapor bath and the *anodyne wash* externally, as directed in the gout, and internally give the *fever powders*, particularly if the fever be violent, together with diaphoretic teas. The body should be kept open by clysters, or cool opening liquors. The diet should be light, as roasted apples, gruel, chicken broths, &c. After the feverish symptoms are over, if the pain continues, the patient should still keep his bed, and take such things as promote perspiration.

A strong tincture of cayenne pepper, and zanthoxylum, or toothach bark, is highly recommended as an external application in all kinds of rheumatic affections. The parts should be rubbed well with it till the circulation is restored. It may also be given internally in proper doses. Lobelia vomits will sometimes effect wonders.

If this disease proceeds from an inflammatory, or vitiated state of the fluids, cleansing medicines should be given afterwards to remove the cause. If from debility, give tonics, &c.

The *chronic* rheumatism is seldom attended with any considerable degree of fever, and is generally confined to some particular part, as the shoulders, back, loins, knees, &c. There is seldom any inflammation or swelling in this case. This rheumatism is often caused by the use of mercury, and is most severe at night, when the patient begins to grow warm in bed. This is also the case when the cause is elastic air. Sometimes it is attended with a fever.

This species of rheumatism is caused either by cold, or by vitiated humors of a scrofulous nature, or by mercurial debility. These, therefore, will guide the treatment.

In the first case hot stimulants should be applied, inwardly and outwardly; as gum guaiacum, mustard, cayenne, cohosh, spirits of turpentine, ginger, zanthoxylum, lobelia, myrrh, grains of paradise, &c. joined with aromatics.

If from foul humors, or mercury, cleansing medicines must be used in addition. In my practice I make use of the *anti-mercurial syrup* for this purpose. It has never failed me in removing mercurial pains, when properly taken.

Whey, for a common drink, is most excellent in this disease. Blisters may sometimes be of service. A plaster of Burgundy pitch, or of hemlock gum, or other warm plaster, worn for some time on the part affected, give great relief in rheumatic pains.

HIP-GOUT, OR SCIATICA.

This disease is so called because the pain is confined to the parts about the hip. It is caused by injuries, and vitiated humors of the system centering there; a thickening of the mucous in the joint; or by any causes which produce rheumatism.

Symptoms.—Intense pain, as though the thigh were dislocated. It is most common with children, and those who have not yet arrived at puberty; sometimes very old persons are attacked with it. It rarely invades those of middle age. It produces wasting of the thigh, lameness; and if not arrested, the ligaments become diseased, and the thigh bone slips out of joint, sometimes making the affected leg three or four inches shorter than the other.

This is not dangerous, or difficult of cure; although in the common practice, the patient is, at least, made a cripple for life. It requires considerable time, however, to remedy a long standing case.

The Cure.—The medicines are much the same as those just recommended in rheumatism. If the parts are painful, (which sometimes extends to the whole leg,) bathe freely with the *anodyne wash*: it exceeds any thing else I ever used for giving relief in these cases, and many can testify to its value. Put a warm plaster on the hip, sufficiently large to extend up to the top of the sacred bone, and let

it be worn continually. Burgundy pitch, hemlock gum, or some warm and stimulating composition plaster may be used for this purpose.

At the same time, if the juices of the system are vitiated, and the constitution is sufficiently strong to bear it, give cleansing syrups, to remove the cause. But if there is great debility, it might be well first to prepare the system by giving strengthening medicines, as well as food.

If there is a disposition to suppurate and form an abscess on the hip joint, we should, by all means, endeavor to draw the matter down upon the thigh, and let that be the seat of the collection. Abscesses upon the hip-joint are very destructive to its ligaments and cartilages, and generally ensure lameness for life. We should therefore endeavor to remove the matter, by applying warm drawing poultices just below the hip, upon a favorable spot, and by bathing the hip with cooling and anodyne washes. We should never cut in upon the joint, or make any opening, issue, or scarification upon it whatever, unless an abscess is actually formed upon it.

In curing this disease, especially in children who are much debilitated, we should never attempt to *force* a cure, as we then defeat our object. We should endeavor to cleanse the system by moderate means, and strengthen nature, so that in time she will gradually overcome the disease herself. The patient should live on solid and nourishing food, and use as much exercise as possible. Friction upon the diseased leg should not be spared.

If the thigh should have become dislocated we may attempt its reduction gradually, first using relaxing ointments, as necessary.

THE VENEREAL DISEASE.

Volumes have been written upon this disease, and almost as many different opinions promulgated of its origin, nature and treatment, by their respective authors. Yet it remains, with most physicians, an ugly, intractable and stubborn disorder, baffling, in many cases, their utmost skill, and fastening itself upon thousands of mankind as the severest scourge that ever visited them. That such is the case, at the present time, every physician, in our large cities especially, can bear witness: and that such is the case I consider a sufficient apology for making known my peculiar method of practice in this afflicting disorder; and I undertake this with the greater confidence as it has been my fortune to be very successful in curing it, particularly in inveterate chronic cases of long standing.

I shall not attempt to trace out the origin of the venereal disease, or decide the claim of proprietorship between the old and new world. It is sufficient for us to know that it flourishes in full luxuriance among us, and that it is our duty to lessen the misery it occasions as far as we are able. Neither doth it become us to reprove any one for being thus afflicted; for, (as the great and good Sydenham observes,) it belongs to God to punish the offence, but it is our duty to assist the distressed and relieve the diseased to the best of our power, and not to make too strict an inquiry into the cause of the evil, and irritate them by our censures.

This disease is propagated, in many ways, viz.: by generation, whence it is communicated to the infant by one of the infected parents; or by touching some soft part by means whereof the virulence and inflammation are absorbed and communicated to the body, in the following manner; as, by sucking; thus the child may infect the nurse by the fine pores of the nipples of the breast; or the nurse the child, by its tender mouth. Children may gain the disease by lying in bed with infected persons. For though grown persons whose flesh grows firmer with age, can scarcely be infected by this means, without impure coition, yet the flesh of children being of a softer and finer texture, easily admits the infection.

The touching of a soft part, as the head or glans of the penis, in impure coition, however, is the usual way of contracting this disease; for the penis being turgid with hot blood and spirits designed for generation, readily imbibes the infection, from an ulcer, or the venereal poison secreted in the vagina, which being thus absorbed, is, upon the retrocession of the blood, wholly or partially carried into the circulation. When the infection received is small in quantity, the action of the absorbents of the urethra, by continually discharging off the poison, may in a measure prevent the extension of the disease. This may also possibly be the effect of a peculiarity of constitution, in some cases When the poison received is in large quantity, or from peculiarity of constitution, whereby it does not equally resist the virus, it enters at once into the circulation and corrupts the whole fluids.

The principal appearances of the venereal disease are two, namely a *clap*, or running from the urethra; and the *syphilis*, or dry pox, as it is called, which is when it appears externally, in sores or ulcers.

In regard to the *clap*, no certain rule can be laid down as to the time it will take before it makes its appearance, after the infection has been received. With some persons it will show itself in the course of three or four days, and even in one; while with others there will not be the least appearance of it for some weeks. It is usually perceptible, however, in the space of from six to fourteen days, and in a male begins with an uneasiness about the parts of generation, such as an itching in the glans penis, and a soreness and tingling sensation along the whole course of the urethra: soon after which the person perceives an appearance of whitish matter at its orifice, and also some pungency on making water.

In the course of a few days the discharge of matter will increase considerably, will assume most probably a greenish or yellowish hue, and will become thinner and lose its adhesiveness; the parts will also be occupied with some degree of redness and inflammation; in consequence of which, the glans will put on the appearance of a ripe cherry, the stream of urine will be smaller than usual, owing to the canal being made narrower by the inflamed state of its internal membrane, and a considerable degree of pain and scalding heat will be experienced on every attempt to make water.

Where the inflammation prevails in a very high degree, it prevents the extension of the urethra on the taking place of any erection, so that the penis is at that time curved downwards with great pain, which is much increased if attempted to be raised towards the belly, and the stimulus occasions it often to be erected, particularly when

the patient is warm in bed, and so deprives him of sleep, producing in some cases an involuntary emission of semen. The above symptoms denote the presence of a *chordee*.

In consequence of the inflammation, it sometimes happens that at the time of making water, owing to the rupture of some small blood-vessel, a slight hemorrhage ensues and a small quantity of blood is voided. In consequence of inflammation, the foreskin likewise becomes often so swelled at the end that it cannot be drawn back; or, that being drawn behind the glans, it cannot be returned. Now and then, from the same cause, little hard swellings arise on the lower surface of the penis along the course of the urethra; and these perhaps suppurate and form into fistulous sores.

The adjacent parts sympathising with those already affected, the bladder becomes irritable and incapable of retaining the urine for any length of time, which gives the patient a frequent inclination to make water, and he feels an uneasiness about the scrotum, perinæum, and fundament. Moreover, the glands of the groin grow indurated and enlarged, or perhaps one or both testicles becomes swelled and inflamed; in consequence of which he experiences excruciating pains, extending from the seat of the complaint up into the small of the back, he gets hot and restless, and a small symptomatic fever arises.

In consequence of the inflammation of the poison extending along the urethra, it sometimes happens that the mucous membrane if the bladder becomes thickened, indurated and ulcerated, and pours out a considerable quantity of mucous purulent matter, which added to the urine, gives it the appearance of whey.

Where the parts are not occupied by much inflammation, few or none of the above mentioned symptoms will arise, and only a discharge with a slight heat or scalding, in making water, will prevail.

If a clap is neither irritated by any irregularity of the patient, nor prolonged by the want of proper or timely assistance, then in the course of from one to three weeks, the discharge from having been thin and discolored at first, will become thick, white, of a ropy consistence, and deprived of its virulence, and from having gradually begun to diminish in quantity, will at last cease entirely, with every inflammatory symptom whatever; whereas, on the contrary if the patient has led a life of intemperance and sensuality, partakes freely of the bottle, and high seasoned food, all the symptoms are aggravated and the cure rendered more tedious and difficult.

Another risk arising from a long continuance of a running, especially if it has been attended with inflammatory symptoms, or has been of frequent recurrence, is the taking place of one or more strictures in the urethra; for, the urethra being excoriated by the continual flux of acrimonious matter, Nature, too hasty in generating new flesh, substitutes a loose spongy substance, which growing every day larger and harder, forms caruncles which obstruct the urinary passages, so as at length to hinder the evacuation of the urine. In this case, instead of the water being discharged in a free and uninterrupted stream, it splits into two, or is voided drop by drop. Such affections become, from neglect, of a most serious and dangerous nature, as they not unfrequently block up the urethra so as to induce

a total suppression of urine; strictures in this stage require a long time to remove entirely.

A stricture of the urethra, however, is not always the consequence of an inflammation from a clap. Occasionally it arises, particularly in old men, from a life of hard labor, lifting and straining, or from a scrofulous affection of the prostate gland, the gland at the neck of the bladder. This is more common among hard laboring farmers.

When a clap has been of long standing, warty excrescences are likewise apt to arise about the parts of generation, owing to the matter falling and lodging thereon; and not unfrequently prove both numerous and troublesome.

Moreover, it often happens that the venereal matter which should have been discharged by the running, is thrown upon the scrotum, either by violent exercise, or the premature use of astringents, and causes a violent pain and inflammation, with a considerable swelling, sometimes of one and sometimes of both the testicles; the running in the mean time proceeding slowly, but the heat of the urine remaining equally troublesome. This is frequently brought on by the impatience of the patient, to stop the troublesome running, by the ill-timed use of astringents.

Having noticed nearly every symptom which usually attends on the gonorrhea, or clap, in the male sex, it will only be necessary to observe, that the same heat and soreness in making water, and the same discharge of discolored mucous matter, together with a slight pain in walking, and an uneasiness in sitting, take place in females as in the former; but as the parts in women, which are most apt to be affected by the venereal poison, are less complex in their nature, and fewer in number, than in men, so, of course, the former are not liable to many of the symptoms which the latter are; and from the urinary canal being much shorter and of a more simple form in them than in men, they are seldom if ever incommoded with strictures. With women, it indeed often happens, that all the symptoms of a clap are so very slight that they experience no other inconvenience than the discharge, except perhaps, immediately after menstruation, at which period they may perceive some degree of aggravation of the scalding and other symptoms.

Women of a relaxed habit, and such as have had frequent miscarriages, are apt to be afflicted with a disease named fluor-albus, or whites, which it is often difficult to distinguish from the running in the clap, as the matter discharged in both is in many cases of the same color and consistence. An accurate investigation, however, both of the symptoms which are present, and these which have preceded the discharge; as likewise the character and mode of life of the person, will generally produce a just conclusion.

In the cure of the gonorrhea or clap, it may be well as a preparatory, in most cases, to give a thorough purge, as of mandrake, (or something similar,) which I have known to cure the disease alone, when taken in the commencement. This lays a foundation upon which to build with some certainty. The bowels should be kept gently open, or soluble during the whole cure.

I then, immediately after the operation of the physic, direct a course of the *anti-mercurial syrup*. This operates, to speak gene-

rally, to drive the disease out of the system, by increasing all the secretions, and the discharge from the penis particularly, for a few days, when the matter assumes a white color and a less virulent appearance, the discharge decreases continually, the scalding stops, till, in the course of from two to four weeks, the running entirely ceases, and the disease is eradicated.

Such is my mode of treatment in a common case of clap, and generally I find it is all that is necessary. But if severe symptoms should arise, and the scalding become exceedingly painful, I make use of the following diuretics, namely: a decoction of pumpkin seeds, in proportion of two ounces of the seeds, bruised, and boiled to a quart, to be drank in the course of two days. A drachm of the herb foxglove boiled with the seeds, would be a useful addition in cases of great irritation, from its sedative power; or, as a substitute for the decoction, the expressed oil of pumpkin seeds may be used, in quantity of from eight to twelve drops, three times a day, or oftener, if required. These preparations have never failed me in relieving the severest scalding and inflammation almost immediately. The oil of pumpkin or melon seeds is, indeed, one of the most efficient diuretics in any case, that I ever used.

In lieu of the above, for relieving the heat of urine, the following may also be used, and I have found them excellent; the herb cleavers, infused in cold water, and drank freely, which is very cooling; or digitalis (foxglove) in powder, from three to six grains, three times a day; or pills of balsam of fir and digitalis; or linseed tea; or a solution of gum arabic; or any thing of a diuretic, cooling and mucilaginous nature.

When the above remedies have been timely applied, the troublesome consequences of chordee, swelled and inflamed foreskin, swelled testicle, strictures, &c., may be entirely avoided.

In case however, of any of the above appearances, as for instance, chordee, it is generally co-extensive with the inflammation, and goes off on the disappearance of it, with the use of the above diuretics. But if then the constriction does not relax, the part may be bathed with a solution of opium; or some penetrating oils. Emollient poultices, as bread and milk, &c., or a poultice of onions, bruised and warmed, will relax the spasm effectually. In a swelled and inflamed foreskin, the anodyne wash, applied with a wet bandage, will generally drive it away in a short time. The penis should not be suffered to hang, but be carried up to the belly with a bandage. If the wash should not be sufficient, a cooling poultice of the whites of eggs beat into a curd with alum, and applied, will scarcely fail; a bean poultice is also good. For a swelled testicle with inflammation, the same means are proper, as above, except that the poultice of beans or bean meal, is more peculiarly effectual. In all affections of the testicles, they should be carried in a suspensory bag. In strictures of the urethra, if inflammation is present, cooling and relaxing diuretics, as above-mentioned, are necessary; and even when there is no inflammation, they may be of benefit, and should be tried. A poultice of onions applied near the stricture, is very relaxing and beneficial. I have never found it necessary to use a catheter or bougie in cases of suppression of urine, and I conceive them to be

very injurious. The cleavers infusion, or pumpkin seed oil, or tea, with the onion poultice, have never yet failed me in any case of giving relief.

It is premised that in the removal of any of the above affections, or of any shape of the venereal disease, the *anti-mercurial syrup*, or something for the same general purpose, (mercury excepted,) is to be taken regularly till the disease is completely eradicated; and it should even be continued a week or two after all the appearances are gone, in order to make a sure cure, and remove all anxiety from the mind of a return.

Whenever it happens, in the cure of the clap, as is frequently the case with persons of a lax habit and feeble constitution, that after the use of the above described remedies, the discharge being lessened and deprived of its acrimony, degenerates into a continual gleet; or, the poison being confined to the urethra, near the extremity of the penis, there remains a drop of matter appearing in the morning, the general remedy being insufficient for its entire expulsion; in such cases, I make use, for injection, of a strong decoction of witch-hazle bark, to which should be added the "balsam of life," in proportion of a wine glass to a pint, and in severe cases, a little white vitriol.

If too painful this may be reduced. It should be used three or four times a day, and if possible, immediately after making water, and retained some time in the urethra. This appears to heal and strengthen the excoriated and relaxed surface of the urethra, and seldom fails to stop the discharge immediately.

In cases where the patient is very desirous to have the discharge stopped sooner than in the natural course, I make use of the above injections, after the running has passed its height, at the same time putting half an ounce of the balsam of life into his bottle of syrup. I am generally averse, however, to using astringent injections while there is any considerable discharge, or till I am convinced the disease is principally out of the system; as I consider it merely the evacuation of the poison in the natural way.

Above all things, particular care should be taken in respect of cleanliness. The matter discharged should not be suffered to touch the head of the penis, if possible, as in such case it is again absorbed, and the disease continually reproduced. An instance that occured in my practice, will exemplify this: a patient of mine, notwithstanding the use of the usual remedies, for a longer time than common, complained that the running was not at all diminished. I inquired into it, and found that he had kept a lock of cotton over the head of the penis to keep the matter off his clothes. This being constantly saturated with the poison, he was continually re-infected as effectually as he could possibly be by copulation; this fully explained the reason why the cure did not progress. In cases where the foreskin cannot be drawn back, particular care should be taken that matter is not suffered to collect behind the glans, as without this, all other remedies are useless. It should be washed or syringed out several times a day, and if there is any rawness, the wash prescribed for injections in the clap, may be used to heal it up.

SYPHILIS, OR THE SECOND FORM OF THE VENEREAL DISEASE.

This form of the disease appears externally, in eruptions or ulcers, generally about the genitals. There are several species of this class. The chancre and bubo are a sort of intermediate stage between the clap and syphilis, and show that the poison is yet in a great measure confined to those parts When the poison becomes diffused through the system, and the fluids corrupted, it breaks out in reddish, brownish, or copper-colored spots over different parts of the body; or swellings in the glands of the neck, ulcers in the throat, and finally large fœtid ulcers, discharging much foul matter. Another species, and the most terrible, is the phagedenic, or eating and sloughing kind. This exhibits a corroding and malignant appearance, and spreads sometimes with rapidity, causiug the most destructive havoc in the course of a few days. It more frequently attacks the glans penis, and foreskin, and often totally destroys them, under the common mode of treatment. There are several other consequences and appearances of this disease, many of which are the effects of mercury, which I shall particularize in their place.

The reader will understand, that neither in any shape of this or any other disease, has the author ever found *mercury* necessary; or any indication which may not equally well, or far better, be answered by other means. It is urged however, that "mercury, *when employed with propriety*, is one of the most useful and powerful instruments in the hands of the profession." But what guarantee have we that it *will be* used with "propriety?" Or what is the standard, of "propriety" when we see it used indiscriminately in almost every disease, in this enlightened age of physic? When we look around us and behold the multitudes of broken and ruined constitutions, entailing lives of debility and misery upon our fellow beings, and which we can trace to the use of this death-dealing mineral, (though even in these cases, perhaps it was used with as much propriety as it could be,) it becomes us, as possessing humanity, seriously to find out a substitute. Such substitutes, the Almighty in his protecting care, has caused to *grow* in almost every land, and they are ready to the hand of every man who is disposed to seek them out and use them.—Should we not then, at once dispense altogether with so unnatural a remedy, the operation of which is to overcome disease by the creation of a greater? Let us no longer incur guilt, or disclose our ignorance, by countenancing the use of a mineral so incompatible with the health and well being of our fellow men.

But I have digressed from my subject; suffice it to say, that instead of mercury as a general remedy in all the above forms of the venereal disease, I substitute my *anti-mercurial syrup*, which not only cures with greater certainty, but leaves the patient free from the distressing effects, so common from the use of the former.

Chancre—is an ulcer, with a thickened base, little inflammation, and no disposition to heal. It generally appears on the foreskin, or behind the glans, and in women about the nymphæ, and clitoris, and sometimes up the vagnia. It makes its appearance either with a slight inflammation which afterwards ulcerates, or there arises a

small pimple or pustulé, filled with a whitish fluid, which soon breaks and becomes a spreading ulcer. This comes on, in from six days to several weeks. They are exceedingly painful.

In order to cure chancres, cleanliness is very requisite. It should be washed as often as any matter collects, or four or five times a day, with warm water, to prevent the absorption and generation of the poison. After washing, I usually sprinkle on a powder of marsh-rosemary roots, or of burnt leather pulverized. This, with the use of the syrup, disposes it to heal kindly. It may be useful also, to wash the sore with a solution of white vitriol, &c. or if very painful, to foment it with a solution of opium, or a decoction of poppies. I have also used as a wash for this and all foul ulcers, a decoction of witch-hazle bark, with great success; and when there is any foul or ugly flesh, I apply the *green salve*, which takes it all out, and prepares it for healing. The chancre, when mismanaged, often terminates in an eating ulcer.

A Bubo—happens when the venereal matter is collected or secreted in the glands of the groin, which, in a measure, intercept its passage into the system, whereby the groin becomes indurated, swelled, and inflamed—producing a bubo. It first comes on with pain in the groin, and hardness and swelling, which continuing to increase, at length becomes as large as an egg, throbs, reddens, and occasions difficulty in walking. In some cases the suppuration is quickly completed; in others very slow; and in others again it goes off slowly without any formation of pus. In a few instances the glands become schirrus.

Other swellings of the groin, as rupture, aneurism, abscess, &c., may be mistaken for bubo, unless the cause is inquired into.

A bubo is never attended with danger when it proceeds on regularly to suppuration, which is the most desirable termination; but in many cases it acquires an indolence after coming to a certain length, or it may terminate in an eating ulcer.

When the penis is inflamed, or has ugly sores upon it, and there is an appearance of a bubo, we should endeavor to bring it to suppuration quickly, with drawing poultices continually applied warm; as a discharge in the groin draws off the matter from the other parts, and soon runs out the disease. But, as a bubo is very inconvenient, if it is not very necessary that it should be brought to a suppuration, we may attempt to disperse it in its commencement; and this I can generally do with the application of my *anodyne wash*, or alum curd. If with these, or similar applications, it does not disperse, I then poultice, as above, to bring it to a head, and as soon as it is fit to open, it should be lanced. After it is open it should be kept as clean as possible, and from the air, and suffered to run. If fungous flesh arises, apply the green salve, and it will heal up as soon as proper.

But if a bubo becomes indolent, and will neither disperse or suppurate with the above means, it may be leeched or blistered, and thus will disperse it in time under a course of the syrup.

If a bubo should degenerate into a corroding and eating ulcer, a poultice of fish-worms, as will be hereafter described, may be applied, till the malignity and fever is extracted.

The *eating* and *sloughing* ulcer, is the most malignant appearance

of the venereal disease. It attacks the head of the penis, or foreskin, and frequently a part or the whole of the penis is destroyed by its ravages. It has a corroded, livid, and angry aspect—will not bear any irritation—often destroys blood-vessels, causing hemorrhages, which, however, are beneficial, unless too profuse. This ulcer is very painful and tender. The eating ulcer is sometimes attended with mortification and sloughing, which destroys fast.

To check the advance of this frightful destruction, I have found a poultice of *fish-worms*, renewed three or four times a day, and continued as long as necessary, to be *infallible*. They extract the fever and poison, and give it a healthy appearance. These are the long red fish-worms, or angle-worms, as they are called, that live in low, muddy earth, and are known by almost every one. They should be applied to the sore alive, and remain till they are dead, when they become very offensive, from the corruption they have absorbed. It is best to repeat them till the poison no longer kills them. If the crawling of the worms should be too painful, they may be cut up and applied immediately. After using the above poultice, should any fungous flesh or foulness appear, the green salve will effectually keep it under, and produce a discharge of healthy pus. If this salve should be too powerful, it may be reduced. Witch-hazle bark, or marsh-rosemary in decoction, should be used for a wash, in the mean time.

When this eating process attacks the glands of the throat, and the the palate, it soon causes a frightful excavation in the back part of the mouth, destroying the power of speech, &c. In these cases, in addition to the syrup, we can only use gargles, as the decoction of witch-hazle, or marsh-rosemary; or the powder of the latter may be blown into the ulcer with a quill or tube. If these ulcers are suffered to proceed, the small bones of the palate and nose become carious, and the nose falls in level with the face.

Often, too, an internal ulcer is formed in the head, and foul matter discharged continually from the nostrils, from this disease. In such cases the powder of bayberry bark may be used as snuff, to excite sneezing.

When this disease appears in scaly and itching eruptions over different parts of the body, afterwards terminating in deep ulcerations, discharging fœtid matter, all that is necessary is a thorough course of the syrup, cleanliness, and such other attention to dressing the sores as may be necessary.

It frequently happens, from the long continuance of the disease, and the pernicious use of mercury, that the bones of the head become exceedingly painful Hard swellings push out suddenly in different parts of the head, and as quickly recede. It is peculiarly distressing in the night, as it destroys sleep. Bathing the head with my anodyne wash, affords great relief from the pain, and keeps the patient comfortable while the cure is progressing. Similar hard swellings or nodes, on other parts of the body, and particularly on the shin bone, may be dispersed in the same manner with considerable friction.

Pains in the bones in damp weather, which are an almost certain consequence of the use of mercury, are very soon relieved by the use of the anti-mercurial syrup.

Chronic and stinking ulcers on the legs, discharging much matter, are generally caused by an ill-cured venereal infection, and require the same cleansing treatment, together with the green salve, if necessary.

When there is great debility, poor appetite, &c., I give with the syrup, the iron and myrrh pills, two of them three times a day.

In short, to conclude, when we discover any affection, local or general, which can be traced to this disease, or to the use of mercury combined with it, we may be sure that the poison yet lurks in the system, and that it must be thoroughly cleansed out, and the cause removed, before the cure can be completely effected.

IMPOTENCE.

Imbecility, is an inaptitude for coition. *Impotency*, is a total incapacity for that action.

Causes.—A deficiency of vital heat, or some impediment to its proper efflux from the spinal marrow; weakness of the solids, profuse venery, ill-cured claps, gleets of long continuance, gravelly disorders, general debility, self-pollution, frequent bleedings, and the use of mercury.

Symptoms.—Flaccidity and hanging down of the testicles, coldness of the glans penis; few, weak, or no erections; pain or weakness of the loins, wandering stitches in the sides and groins, headach, involuntary emissions, without erections, hypochondria.

If it is an original disease, the cure is more difficult; in old men, impracticable. If the patient is young and has no other complaints of any consequence, or if it proceeds only from indiscreet excesses, it is easily curable. If accompanied with a gleet or clap, first cure them.

The Cure.—Great regard should be paid to diet and exercise. The patient should keep his mind constantly employed, to prevent as much as possible the incursion of venereal desires and thoughts. He should rise early in the morning, take a great deal of exercise, stopping short only of fatigue. The less fluids that are drank the better. Let the diet be of shell fish of all sorts, particularly oysters, lobsters, and crabs; of flat-fish, eels, and such like; or of any wild fowl, the most eligible of which are pigeons, partridges, and woodcock; add to which, eggs, strong meat soups, any animal (but no vegetable) food, particularly pork, calves' head, with the skin on, calves' and neats' feet. Milk is the best breakfast and supper, and brandy and water the most proper drink at dinner. All strengthening agglutinants, chalybeates, and aromatics, are useful. The testicles and adjacent parts should be bathed night and morning with equal parts of alcohol and vinegar, or tinctured with hot stimulants, till they cabbage, or contract to their place; nor is it a matter unworthy attention to wipe the glans dry after making urine.

Barrenness, is owing generally to the same causes, and requires

the same method of treatment. To give fruitfulness to the semen, by determining a sufficient quantity of nervous influence to it, nothing equals the oil of cloves: this, therefore, ought not to be omitted in any medicines that are given, calculated for that purpose.

The clove jelly, with perhaps the addition of the tincture of cantharides, will consequently be a powerful remedy. Or, take half an ounce of oil of cloves, dissolve in the yoke of an egg, and then add an ounce and a half of tincture of cantharides: of these drops let two tea-spoonsful be taken night and morning.

Together with these, let general strengthening medicines, and chalybeates, be used, as the *tonic tincture*, the *female strengthening syrup*, and such like.

In the meantime the patient should abstain from copulation.

SCROFULA, OR KING'S EVIL.

This disease chiefly affects the glands, especially those of the neck. Children and young persons, of a sedentary life, are very subject to it. The inhabitants of cold, damp, and marshy countries are most subject to it. It was called *king's evil* from an imaginary cure performed by the royal touch.

Causes.—An acrid blood, hereditary disposition, venereal taint, or a scrofulous nurse. Children born of sickly parents, are apt to be affected with the scrofula. It may likewise proceed from such diseases as weaken the habit, or vitiate the humors, as the small pox, measles, &c. In short, whatever tends to vitiate the humors or relax the solids, paves the way to scrofula; as the want of proper exercise, too much heat or cold, confined air, unwholesome food, bad water, the long use of poor, weak, watery aliments, the neglect of cleanliness, &c.

Symptoms.—At first small knots appear under the chin, or behind the ears, which gradually increase in number and size, till they form one large hard tumor. This often continues for a long time without breaking, and when it does break, it only discharges a thin, acrid, watery humor. Other parts of the body are likewise liable to its attacks, as the arm-pits, groins, feet, hands, eyes, breast, &c. Nor are the internal parts exempt from it. It often affects the lungs, liver, spleen, prostate gland, &c, and frequently the glands of the mesentery are greatly enlarged by it.

Those obstinate ulcers which break out upon the feet and hands, with swelling, and little or no redness, are of the scrofulous kind. They seldom discharge good matter, and are more difficult of cure. The *white swellings* of the joints seem likewise to be of this kind. I have seen the calf of a man's leg swelled with a scrofulous humor till it measured two feet in circumference. There is not a more general symptom of scrofula than a swelling of the upper lip and nose. It sometimes begins in a toe or finger, which continues long swelled, with no great degree of pain, till the bone becomes carious.

THE CURE.—As this disease proceeds in a great measure from relaxation, the diet ought to be generous and nourishing; all slops should be avoided. As much exercise should be taken in clear open air as the patient can bear. Cold bathing particularly in salt water, is of great benefit, as it braces the solids. Even salt water drank is of great use.

When the disease proceeds principally from vitiation or foulness of the humors, cleansing syrups, or such like, should be used, in the commencement, and continued as long as may be necessary; at the same time, also, giving medicines to strengthen the blood, as the iron and myrrh pills, &c. After continuing this course till the system is sufficiently purified, or till the matter of the scrofula becomes very thin, and the bloating reduced, then give chalybeates, tonics, bitters, and stimulants; as the *tonic tincture*, which is very effectual, mineral waters, &c.

When a fistulous pipe, with a callous secreting surface, is formed in the scrofulous tumor or ulcer, that must be removed, in addition to the other means above recommended, before it can be healed up soundly. This pipe often runs in to a considerable depth. I generally remove this by inserting the *green salve* into it; if deep, it may be pushed in through a tube, or with a probe, and it should reach the bottom. This kills the pipe, and causes it to separate from the surrounding flesh, in the space of from one to three days, when it may be pulled out with a small forceps. The salve should be renewed daily. When the pipe is extracted, the inflammation in the surrounding flesh causes it to unite, when the sore may be healed up. This operation is attended with considerable pain; but the object cannot be effected without occasioning some distress, and this method inflicts the least of any that I am acquainted with.

To disperse a scrofulous tumor, when it has not progressed so far as to render it impossible, softening and dispersing ointments may be used, as the *bitter sweet ointment*, and such like; or cold applications, as salt, sal ammoniac, &c.

If they cannot be dispersed, we may attempt to break them by the application of drawing poultices; as of soap, sugar and flour; sorrel leaves, wilted and laid on; yellow dock, &c.

In scrofulous sores, of ugly, gleeting and ill-conditioned appearance, much benefit has been obtained by the application of a poultice of pond-lily roots, or of poke root; also, bayberry bark, pulverized, or the "balsam of life;" or the *green salve*, and such things as will stimulate the surface of the sore into action.

The rattle-snake violet, called also scrofula plant, is said to possess great efficacy in this disease. Many other plants have been extolled as useful, as the pond-lily, given internally, as well as applied externally; also the yellow-dock, and the burdock. Frog's spawn has been used with success in dispersing the tumors.

The cure of scrofula is tedious, at best; but it is not on that account the less practicable if a proper treatment is made use of. *Perseverance*, is a very necessary ingredient in the means to be made use of; and if changes take place in the appearance of the disorder, we must endeavor to adapt the medicine accordingly: continually

bearing in mind, that nothing must be omitted which can give tone to the stomach, and invigorate the system.

SCURVY.

The scurvy is a diseased state of all the fluids. It prevails chiefly in cold northern countries, especially in low damp situations, near large marshes, or great quantities of stagnating water. It often proves fatal to sailors on long voyages, particularly in ships that are not properly ventilated, or where cleanliness is neglected.

The *land scurvy* is not so severe in degree as the *sea scurvy*, the latter being attended with putrid symptoms.

Causes.—An acidity, acrimony, or (at sea) a putrefactive quality in the blood, often introduced by a moist air, obstructed perspiration, putrid water, poorness of blood; the continual use of salted, or smoke-dried provisions, or any kind of food that is hard of digestion and affords little nourishment. Surfeits, as they are called, and scorbutic eruptions, originate from the too liberal use of vegetables.

Symptoms.—An acute pain in the head; universal weariness, heaviness, and difficulty of breathing, especially after motion; rottenness of the gums, which are apt to bleed on the slightest touch; a stinking breath; frequent bleeding at the nose; crackling of the joints; difficulty of walking; sometimes a swelling and sometimes a falling away of the legs, on which there are livid, yellow, or violet colored spots. The face is generally of a pale or leaden color. As the disease advances, other symptoms come on; as rottenness of the teeth, discharges of blood from different parts of the body; foul obstinate ulcers, pains in various parts, especially about the breast, dry scaly eruptions all over the body, &c. At last, a wasting, hectic fever comes on, and the miserable patient is often carried off by a dysentery, diarrhœa, a dropsy, the palsy, fainting fits, or a mortification of some of the bowels.

The Cure.—We know of no way of curing this disease but by pursuing a plan directly opposite to that which brings it on. It proceeds from a vitiated state of the humors, occasioned by errors in diet, air, or exercise. The cure, therefore, is to be effected by a proper regulation of these important articles.

If the patient has been obliged to breathe a cold, damp, or confined air, he should be removed to a dry, open, and moderately warm one. If the disease proceeds from a sedentary life, or depressing passions, the patient must take exercise, and keep cheerful company.

When the scurvy has been brought on by a long use of salted provisions, the proper medicine is a diet consisting chiefly of fresh vegetables, as oranges, apples, horse-radish, scurvy grass, brook-lime, mints, smellage, water cresses, &c. The use of these, with milk, potherbs, new bread, and of buttermilk or whey for a constant drink, or new beer, or fresh cider, will seldom fail to remove a scurvy of

this kind, if taken before it is too late; but to have this effect, they must be persisted in for some time. When fresh vegetables cannot be obtained, acids of all kinds, particularly the elixir of vitriol, and vinegar, may be used freely.

To the above regulations of diet, may be added the following medicines: Indian turnip made into a conserve with sorrel, and horse-radish, or mustard. Infusions of bitter plants; decoctions of dandelion, dock, or sarsaparilla, and such like, are proper. All kinds of sallad are good in the scurvy, and ought to be used, freely. Sulphur is beneficial in some cases, but should be given cautiously, or it may weaken too much.

In the land scurvy, a milk diet sometimes produces extraordinary effects. This preparation of Nature is a mixture of animal and vegetable properties, which of all others is the most fit for restoring a decayed constitution, and removing that particular acrimony of the humors, which seems to constitute the very essence of scurvy.

In some states of the scurvy, cleansing and alterative syrups are proper.

LEPROSY AND ELEPHANT LEG.

The leprosy is a cutaneous disorder, which appears in whitish dry scabs, and often spreads over the whole body. Sometimes one leg only is affected, which swells to an enormous bulk.

Causes.—Obstructed perspiration, weakness of the solids, poverty of blood, ill-cured itch, the remains of which will often lurk, appearing and disappearing, for many years, and at length will break forth in this dry scurf, gradually enlarging.

Symptoms.—Sometimes it is confined to the palms of the hands only, with fissures which run parallel to each other; sometimes to a little below the elbows; one while to the face only; another in white, hard scabs on the hands and arms; intolerable itching; the elephant's leg.

The Cure.—For the leprosy give the most nourishing diet, and use precisely the same method as recommended under scurvy. For the elephant's leg, let it be wrapped up in a cloth on which tar ointment with camphor has been spread.

THE ITCH.

Though this foul disorder is commonly communicated by infection, yet it seldom prevails where due regard is paid to cleanliness. It generally appears in the form of watery pustules, first about the wrists, or between the fingers; afterwards it affects the arms, thighs, legs, &c. These pustules are attended with an intolerable itching, especially when the patient is warm in bed, or sits by the fire. Some-

times, indeed, the skin is covered with large blotches or scabs, and at other times with a white scurf or scaly eruption.

The itch is seldom a dangerous disease, unless when it is rendered so by neglect or improper treatment. If it is suffered to continue too long, it may vitiate the whole mass of humors; and if it be suddenly drove in, without proper evacuations, it may occasion fevers, inflammations of the viscera, or other internal disorders.

People ought to be extremely cautious how they take other eruptions for the itch; as the stoppage of these may be attended with fatal consequences. Many of the eruptive disorders to which children are liable, have a near resemblance, and infants are often killed by being rubbed with greasy ointments that make the eruptions strike suddenly in, which Nature had thrown out to preserve the patient's life or prevent some other malady.

For remedies, see "recipes."

SCHIRRUS AND CANCER.

A schirrus is a hard indolent tumor, usually seated in some of the glands; as in the breast, the arm-pits, &c. If the tumor becomes large, unequal, of a livid, blackish, or leaden color, and is attended with violent, lancing pains, it gets the name of *stone* or *lump cancer*. It sometimes appears in the form of a spider or other animal, having body and legs, fibres, or roots, when it is usually called a *spider cancer*. When the skin is broken, and a thin acrid matter, of an abominably fœtid smell, is discharged from the sore, it is called an open or ulcerated cancer, or from its appearance, a *rose cancer*.

Many physicians, and some too, who have had great experience as well as success in the cure of cancer, have expressed a belief that, at least in some instances, it is possessed of an independant existence, and may almost be said to have animal life. The sensation of locomotion which the patient feels in the legs, or roots of a spider cancer, may be taken as some confirmation of this supposition. Dr. William Barber, a botanic physician, whose healing skill is known from one end of the State of New-York to the other, avers, that he has repeatedly found *living animals* in these lumps, and some of them an inch in length, and these were seen by many witnesses. However, be this as it will, one thing is certain, it is a most intractable and unyielding disease; and requires powerful applications, and unbending perseverance, with the best of medicines, to make it relax its hold.

Persons after the age of forty-five, particularly women, and those who lead an indolent, sedentary life, or have lived in celibacy, or have had no children, are most subject to this disease. It is commonly confined to the glands, as the mamma, or breast, the arm-pit, the testicles, &c. But it is now and then to be met with in the womb, as likewise in the face, under the jaw, and other parts that are thinly covered with flesh, and which at the same time are a good deal exposed to external irritation, such as the lower lip, the angles of the eyes, the organs of vision, the wings of the nose, tongue, and penis. A cancer is an ulcer of the very worst kind, with an uneven surface

and ragged and painful edges, which spreads in a very rapid manner, discharges a thin acrimonious matter, that excoriates the neighboring integuments, and has a very fœtid smell, and which is usually preceded by a hard schirrous swelling of the part, if glandular.

Causes.—A gross, acrimonious, malignant humor in the system, which is intercepted by the glands, and collecting in them, produces inflammation and tumors : thus a nucleus or collecting point is formed, to which the cancerous humors centre. Cancers may proceed from suppressed evacuations ; hence it so frequently attacks women of a gross habit, particularly old maids and widows, about the time when the menstrual flux ceases. It may be occasioned by the long continued use of food that is too hard of digestion, or of an acrid nature ; by barrenness, celibacy, indolence, cold, bruises, friction, pressure, or the like. Women often suffer from the last of these by means of their stays, which squeeze and compress their breasts so as to occasion great mischief.

If there were any doubts that a cancer proceeds from a constitutional predisposition, or that it is fed and kept alive by an humor that pervades the whole system, surely the frequent and almost certain return of the cancer, after it has once been entirely taken out, must settle the question.

Symptoms.—This disorder seems often to be very trifling in the beginning ; a hard tumor about the size of a hazle-nut, or perhaps smaller, is generally the first symptom. This will often continue for a long time without appearing to increase, or giving the patient great uneasiness ; but if the constitution be hurt, or the tumor irritated by pressure or improper treatment of any kind, it begins to extend itself towards the neighboring parts, by pushing out roots, or limbs. It then gets the name of *cancer*, from a fancied resemblance between these limbs and the claws of a crab.

The color of the skin begins to change, which is first red, afterwards purple, then bluish, livid, and at last black. The patient complains of heat, with a burning, gnawing, shooting pain. The tumor is very hard, rough, and unequal, with a protuberance or rising in the middle ; its size increases daily, and the neighboring veins become thick, knotty, and of a blackish color.

The skin at length gives way, and a thin sharp ichor begins to flow, which corrodes the neighboring parts till it forms a large unsightly ulcer. More lump cancers arise, and communicate with the neighboring glands. The pain and stench become intolerable ; the appetite fails ; the strength is exhausted by a continual hectic fever ; at last, a violent hemorrhage, or discharge of blood from some part of the body, with faintings or convulsion fits, generally put an end to the miserable patient's life.

Regimen.—The diet should be solid, plain and nourishing ; all strong liquors, and high seasoned or salted provisions are to be avoided. The patient may take as much exercise as he can easily bear ; and should use every method to divert thought and amuse his fancy. All kinds of external injury are carefully to be guarded

against, particularly of the affected part, which ought to be defended from all pressure, and even from the external air, by covering it with fur or soft flannel.

MEDICINE.—This is one of those diseases which the faculty of the present day have generally condemned as incurable; at least by any other means than the *knife*;—and it is unnecessary for me here to show the fallacy of that method, where there is a real cancer. The experience of all who have resorted to it, to say nothing of its unreasonableness, should be sufficient to condemn this operation in toto. As I have already said of another disorder, cancer is incurable because we know not *how* to cure it:—not because it is, from its nature, irremediable. However, it is an ugly and obstinate malady, and requires considerable time to eradicate it thoroughly.

My method of treatment is simply this; and which I conceive strikes at the root of the disorder: destroy the cancerous humor in the system by a thorough course of alterative and cleansing medicines. It is scarcely necessary for me to add, that in effecting this, I make use of the *anti-mercurial syrup*, which operates safely and effectually, even when the patient is much reduced. Joined with this, I also give the iron and myrrh pills. These, or preparations which will have the same effect, that is, to cut off the source of the cancer, are all the internal general remedies that are necessary, except perhaps some little occasional medicines.

Externally, if the tumor is small, and not yet open, apply softening and detergent ointments; as the *bitter-sweet ointment*, &c., or electricity may be applied to it. If the tumor is of sufficien tsize to warrant the practitioner in drawing it out with plasters, he may attempt it. Several plasters for this purpose will be found among the recipes. Their operation is somewhat painful, but that cannot be avoided, for we must take the life of the cancer or we cannot cure it. The use of plasters, however, does not render the internal remedies less necessary.

If the cancer has become open, and ulceration commenced, apply *cat skins*, newly stripped off and warm; or the flesh of fresh killed chickens. These will extract the fever and acrimonious poison astonishingly, and become in the course of two or three hours, perfectly rotten and corrupted with it They should then be changed for a fresh application. This method should be continued till the poison and life of the cancer is extracted, when the whole substance of the tumor will become a dead mass, and may be taken out with ease, and without pain. If it is not convenient to obtain the skins or flesh to apply continually, they may be alternated with poultices of charcoal and yeast, which also extracts putridity. The flesh of any animal is good, but I consider cat-skins, or chickens, preferable.

Angle-worms, or fish worms as they are called, are not inferior to either of the above applications; they should be laid on alive, and remain till they become dead and putrid, when they should be changed. Snails, also, answer the same purpose. Many other animals, particularly frogs and toads, draw powerfully when placed on a cancer, and may be used when more convenient. These remedies may not appear very scientific, or fashionable, but in a disease

as stubborn as this, we should not be delicate about the means, if we can only save life.

Few things contribute more to the healing of foul sordid ulcers of any kind, than keeping them thoroughly clean. This ought never to be neglected. The best application for this purpose seems to be the carrot poultice. The root of the common carrot may be grated and moistened with as much water as will bring it to the consistence of a poultice. This must be applied to the sore, and renewed twice a day. It generally cleans the sore, eases the pain, and takes away the disagreeable smell, which are objects of no small importance in such a dreadful disorder. The charcoal and yeast poultice has the same effect. In every species of open cancer, the air should be excluded as much as possible.

No benefit can be expected from any medicine in this disease, unless it be persisted in for a long time. It is of too obstinate a nature to be soon removed, and a radical cure must be brought about by inducing an almost total change of habit, which must always be a work of time. From four months to a year, or even more may be requisite to perform a substantial cure; and the patient must make up his mind, as he values his life, to persevere steadily in a course of cleansing medicines till a cure is effected, let it take what time it will. Many discouraging symptoms and unpleasant sensations, may arise in the progress of the cure, and they may even appear quite alarming at times, but they generally pass off in a little time, and should not be allowed to impair our confidence in a final cure.

Among the medicines found useful in eradicating cancer, are: yellow dock root, in decoction, for a daily drink; and also applied externally as a poultice. Also poke or coke root, in decoction and poultice. A salve composed of the expressed juice of sorrel, poke leaves or berries, and yellow dock, dried away in the sun has been highly recommended. The extract of cicuta is also used with benefit as a discutient salve. Prince's pine, or pipsissaway in decoction is also very cleansing.

DISORDERS OF THE SENSES.

We shall here endeavor to point out some of the diseases to which the organs of sense are liable, and to show how they may be prevented or remedied.

OF THE EYE.

No organ of the body is more subject to diseases than the eye; and from its delicateness, there is none so difficult to remedy when diseased. The eyes are hurt by viewing bright or luminous objects; keeping the head too long in a hanging position; violent headachs; excessive venery; the long use of bitters; various diseases, as the small pox, measles, &c.; but above all, from night-watching and candle-light studies. The eyes are often hurt by the stoppage of customary evacuations, as sweating feet, the menses, piles, old ulcers, &c. All kinds of excess are likewise hurtful to the eyes, as drunkenness.

For the treatment of inflammatory diseases of the eyes, see the article on *Inflammation of the Eyes.*

Gutta Serena, as it is called, is an abolition of the sight, without any apparent cause or fault in the eyes. When it is owing to a decay or wasting of the optic nerve, it does not admit of a cure; but when it proceeds from a compression of the nerves by redundant humors these may in some measure be drained off, and the patient relieved. For this purpose the body must be kept open by laxatives; blisters applied to the back of the neck, together with cleansing syrups, and sneezing snuffs.

A *Cataract*—is an obstruction of the pupil by the interposition of a film or other opake substance which either diminishes or totally obstructs the sight. It is generally an opacity of the crystalline humor. In a recent, or beginning cataract, the same medicines are to be used as in gutta serena. These will sometimes succeed; but when this treatment does not remove the cataract, discutient applications may be made to the eye, as fresh cicuta; or fine sugar, sifted and mixed with honey; bitter-sweet ointment, or fomentations, &c.

Short-sightedness, and seeing only at too great a distance—are disorders which depend on the original structure of the eye, and therefore admit of no cure. The inconveniences arising from them, however, may in some measure be relieved by the help of proper glasses. The former requires the aid of a concave, and the latter of a convex glass.

Squinting depends upon an irregular contraction of the muscles of the eye, from a spasm, palsy, epilepsy, or an ill habit. Children often contract this disorder by having their eyes unequally exposed to the light, or by looking at objects held close to their nose. They may likewise acquire it by imitating a squinting person. As this disorder gives a person a very disagreeable appearance, and is rarely cured, parents ought to be careful to prevent it. Almost the only thing that can be done is to contrive a mask, or goggles, for the child to wear, which will only permit him to see in a straight direction.

Spots, or Specks, on the eyes are generally the effect of inflammation, and often proceed from the venereal, small pox, measles, &c. We should endeavor to remove these by discutient applications, as prescribed for the cataract.

The *Blood Shot Eye*, may be occasioned by a stroke, a fall, retching, vomiting, violent coughing, &c. It appears at first like a bit of scarlet, and is afterwards of a livid, blackish color. This disorder generally goes off, in time, without medicine. But as it is very disagreeable, it may be quickly removed by applying fresh warm flesh to it to extract the fever, and restore the circulation. This flesh should be changed every two or three hours till the stagnated blood is removed.

The *watery* or *weeping eye*, is generally occasioned by a relaxation or weakness of the glandular parts of that organ. These may be braced and strengthened by bathing the eye with cold water, brandy and water, rose water, white vitriol, a decoction of oak bark, or of witch hazle, with a little "balsam of life" added.—When this disease proceeds from an obstruction of the tear duct, conveying the tears into the nose, it is only to be remedied by a surgical operation, or inserting a silver tube in place of the natural one.

THE EAR.

The functions of the ear may be injured by wounds, ulcers, or any thing that hurts its fabric.—The hearing may likewise be hurt by excessive noise; violent colds in the head; fevers; hard wax, or other substances sticking in the cavity of the ear; too great a degree of moisture or dryness in the ear. Deafness is very often the effect of old age, and is incident to most people in the decline of life. Sometimes it is owing to an original fault in the structure or formation of the ear itself. When this is the case, it admits of no cure; and the unhappy person not only continues deaf, but likewise dumb for life. When the venereal, or mercurial disease causes an enlargement of the bones of the head, it often brings on deafness.

When deafness is the effect of wounds, or ulcers in the ear, they must be healed, using, if necessary, general cleansing remedies. If it proceeds from old age, it is not easily removed, as it is caused by a decay of sensibility in the nerves of the ear. When it proceeds from cold of the head, the patient must be careful to keep his head warm, especially in the night, and if necessary use diaphoretics and fomentations. When deafness is the effect of a fever, it generally goes off after the patient recovers. If it proceed from dry wax sticking in the ears, it may be softened by pouring warm water, or which is far better, warm urine, into them. These may be also injected into the ear moderately with a syringe fitted with a pad to sit on the ear, making it air tight, so that suction may be employed, as well as injection, and in this manner rince out the ear. In deafness, proceeding from a dryness of the ears, which may be known by looking into them, a few drops of tincture of assafœtida, or musk, may be mixed with warm urine and dropped in every night at bed time, stopping the ear with a little cotton.

Some, for the cure of deafness, recommend the gall of an eel mixed with the spirit of wine, to be dropped into the ear. Ox gall and balsam of tolu, equal parts, is a good application, to be dropped into the ear when the disease depends upon an ulcer. The oil of fir, one or two drops used at a time, is also very healing. If from an abscess, suppuration must be promoted by means of emollient poultices, steams, &c.

Though such applications may be of service, when applied with judgment, yet if misapplied, they will do great hurt. Neither the eyes nor the ears ought to be tampered with; they are tender organs, and require a very delicate touch. For this reason, what we would chiefly recommend in deafness is, to keep the head warm. From whatever cause this disorder proceeds, this is always proper.

TASTE AND SMELL.

Though these senses are not of so great importance to man in a state of society, as the sight and hearing, yet as the loss of them is attended with some inconveniency, they deserve our notice. They are seldom to be restored when lost, which ought to make us very attentive to their preservation, by carefully avoiding whatever may in the least prove injurious to them.

Luxury is highly injurious to these organs. When the nose and palate are frequently stimulated by fragrant and poignant dishes, they soon lose the power of distinguishing tastes and odors with any degree of nicety. Man, in a state of nature, may perhaps have these faculties as acute as any other animal. This is exemplified in the Indian.

The sense of smelling may be diminished or destroyed by diseases; as the moisture, dryness, inflammation or suppuration of the membrane which lines the inside of the nostrils. A defect, or too great a degree of solidity, of the small spongy bones of the upper jaw, the caverns of the forehead, &c. may likewise impair the sense of smelling. It may also be injured by a collection of fœtid matter in those caverns, which keeps constantly exhaling from them. Few things are more hurtful to the sense of smelling than taking large quantities of snuff.

When the nose abounds with moisture, or when it is too dry, sternutatories, or stimulating snuffs, may be used; as marjoram; bayberry bark, colt's foot, &c. The steam or vapor of vinegar, poured on a hot iron and received into the nostrils, is likewise of use for softening the mucus, opening obstructions, &c.

If there is an ulcer in the nose, discharging matter, and proceeding from the venereal or any other disease, the cause should be removed by general cleansing remedies, to which may be added washes or ointments of the parts, with substances of a healing nature.

If there be reason to suspect that the nerves which supply the organs of smelling are inert, or want stimulating, volatile salts, strong snuffs, and such things as occasion sneezing may be applied to the nose.

The *taste* may be diminished by crusts, filth, mucus, scabs and warts covering the tongue. It may be depraved by a fault of the saliva, which, being discharged into the mouth, gives the same sensations as if the food which the person takes had really a bad taste; or it may be entirely destroyed by injuries done to the nerves of the tongue and palate, by frequent mercurial salivations, and other causes. Few things prove more hurtful, either to the sense of tasting or smelling, than obstinate colds, especially those which affect the head.

When the taste is diminished by filth, mucus, &c. the tongue ought to be scraped and frequently washed with a mixture of water, vinegar and honey, or some other detergent. Where the saliva is vitiated, which seldom happens, unless in disease, or from medicine upon the removal of these, depends the cure. To relieve it, however, in the mean time, the following things may be of use:

If there be a bitter taste, it may be taken away by vomits, purges, and other things which evacuate bile. What is called the nidorous taste, arising from putrid humors, is corrected by acids. A salt taste is cured by plentiful dilution with watery liquors. An acid taste is destroyed by alkalies.

When the sensibility of the nerves which supply the organs of taste, is diminished, the chewing of horse-radish, or zanthoxylum, or other stimulating substances, will help to recover it.

OF THE TOUCH.

The sense of touching may be hurt by any thing that obstructs the nervous influence, or prevents its being regularly conveyed to the organs of touching; as pressure, extreme cold, &c. It may likewise be hurt by too great a degree of sensibility, when the nerve is not sufficiently covered by the scarf-skin, or where there is too great a tension of it, or it is too delicate. Whatever disorders the functions of the brains and nerves, hurts the sense of touching. Hence it appears to proceed from the same general causes as palsy and apoplexy, and requires nearly the same mode of treatment.

In a *stupor*, or defect of touching, which arises from an obstruction of the cutaneous nerves, such medicines as excite the action of the nerves, or stimulate the system, may be used. For this purpose, zanthoxylum, Cayenne pepper, horse-radish, &c. may be taken inwardly; the disordered parts at the same time may be frequently rubbed with arse-smart, fresh nettles, and such like.

Nothing so much relaxes the nervous system, so much blunts the acuteness of every sense, and destroys its energy, as intemperance. To say of a man when drunk, that *he has lost his senses*, is literally true in the most comprehensive meaning of the word. He can neither see, hear, taste, smell, or feel, with exactness; and though he may flatter himself, that with the return of sobriety, he recovers his senses also, yet they become more and more impaired by every debauch, till frequent repetitions of the frantic indulgence consign him to blindness, to deafness, and to the grave. Excess in eating produces the same effects, and like the touch of the torpedo, benumbs every faculty. It particularly vitiates the taste and smell, and thus defeats the chief purposes for which these senses were given, to inform us of the wholesome or noxious properties of every thing we eat and drink.

Uncleanliness is also highly injurious to the organs of sensation. Perhaps the benignity of Nature is not displayed in any thing more strongly than in the warnings she gives of this evil, and in her own endeavors to avert it. She has left us so little to do, that we deserve no pity for the severest punishment of our neglect. See how kindly she has guarded the extremities of the nerves all over the body, the interior parts of the nose, the mouth the ear, the eye, against external annoyance! Observe with what efforts, entirely independent of our will, she strives to relieve those delicate organs from all impurities! The uneasiness we feel upon such occasions ought to rouse our immediate attention. Shall we suffer dirt to gather upon the skin, to dull the sense of feeling, to obstruct the

pores, and to drive back into the system the noxious particles which Nature endeavors to throw off, when the use of soap and water would prevent every inconvenience? Is it too much trouble to wash the ears; to dip the face, with the eyes open, into a bason of clean water, four or five times in a morning, to rinse the mouth, and to keep the tongue clean, not by scraping it, but by attending to the state of the stomach, of which the tongue is the index? some people seem to be as much afraid of water as if they had been bitten by a mad dog; and if they remain obstinate in that antipathy, I can only say, they deserve a far worse end than that of such unfortunates, to be suffocated in their own filth.

INFLAMMATIONS AND ABSCESSES.

From whatever cause inflammation proceeds, it must terminate either by dispersion, suppuration, or gangrene. Though it is impossible to foretel with certainty in which of these ways any particular inflammation will terminate, yet a probable conjecture may be formed with regard to the event, from a knowledge of the patient's age and constitution. Inflammations happening in a slight degree upon colds, and without any previous indisposition, will most probably be dispersed; those which follow close upon a fever, or happen to persons of a gross habit of body, will generally suppurate; and those which attack very old people, or persons of a dropsical habit, will have a strong tendency to gangrene.

If the inflammation be slight, and the constitution sound, the dispersion ought always to be attempted. This will be best promoted by applying cooling, discutient, and anodyne washes and fomentations. A free application of the "anodyne wash," will generally be sufficient to disperse any common inflammation, when it is not caused by a superabundance of impurities in the system: or, in place of the "anodyne wash," salt and vinegar, may be used; or emollient fomentations may be applied to the part.

But if, notwithstanding these applications, the symptomatic fever increases, and the tumor becomes larger, with violent pain and pulsation, it will be proper to promote the suppuration. The best applications for this purpose, are soft, warm poultices; as bread and milk, a mixture of soft soap, lard and rye flour, or similar drawing substances: taking care to put them on as warm as the patient can bear, and change them two or three times a day. If the suppuration proceeds but slowly, bruised raw onions may be spread upon the poultice. Roasted sorrel is a powerful application to break a bile. When the abscess is ripe or fit for opening, which may be easily known from the thinness of the skin in the most prominent part of it, fluctuation of matter, which may be felt under the finger, and generally speaking, an abatement of the pain, it should be opened with a lancet. The last way in which an inflammation terminates, is in a gangrene or mortification, the approach of which may be known by the following symptoms:—The inflammation loses its redness, and becomes duskish or livid; the tension of the skin goes off, and it falls flabby; little bladders filled with acrid water of different

colors spread all over it; the tumor subsides, and from a duskish complexion becomes black; a low quick pulse, with cold clammy sweats, are the immediate forerunners of death.

When these symptoms first appear, the part ought to be dressed with a poultice of charcoal and yeast, or other antiseptics, as arse-smart, wild indigo, &c. Afterwards the green salve should be applied to produce a separation of the mortified parts from the sound flesh; when the wound will become a common ulcer, and must be treated accordingly.

Fellons or *Whitloes*, belong to this class of complaints. They are very painful. They are generally caused by purulent matter lodged very deep, probably within the bone membrane of the finger. When this is first coming on, which may be known by a pricking sensation deep in the finger, it may be dispersed by immersing it in lie, as hot as it can be borne, for the space of half an hour. This should be repeated two or three times a day, as long as necessary. If, notwithstanding this, it should continue to increase, the part should be opened to the bone with a lancet, and the incision made wide, as fungous flesh is very apt to shoot out and become troublesome. A poultice of blue flag root and wild indigo root will almost invariably disperse a fellon in its commencement; as also will warm fresh flesh. I have known it relieved in a very short time, by placing the finger in a cat's ear; but the animal seemed to feel the effects of it for some time.

Biles and similar collections are also included under this head. They are all abscesses in consequence of a previous inflammation, and show impurities in the blood; and not only that, but furthermore, that there is sufficient power in the action of the system to throw the impurities out. The suppuration of biles ought, therefore, to be promoted, by drawing applications, or such as will cause them to break, which is all that is necessary.

BURNS.

For burns or scalds of all kinds, or from whatever cause, the most effectual, convenient, and cheap (although homely) remedy, is *urine*. Let cloths wet with this, be laid on, and kept continually soaked with it, till the fire is extracted and the pain abates, which will usually be effected in the course of thirty minutes. This is so complete a remedy that not even a blister will appear from the burn, or any other disfiguration, unless the skin was badly broken in the first place. Afterwards the parts may be oiled with sweet oil.

Among other things which are beneficial in burns, are, lime-water and sweet oil, or linseed oil; raw potatoes, scraped fine and laid on; a poultice of slippery elm bark, or of bread and milk; an ointment of green elder; or an ointment of green clover, and such like.

If the burn should shew a disposition to mortify, it should be treated as other cases of mortification.

BRUISES.

Bruises are generally productive of worse consequences than wounds. The danger from them does not appear immediately, by which means it often happens that they are neglected. It is needless to give any definition of a disease so universally known; we shall therefore proceed to point out the method of treating it.

In slight bruises it will be sufficient to bathe the part with warm salt and vinegar, to which a little spirits may occasionally be added, and to keep cloths wet with this mixture constantly applied to it. For this purpose, also, the "anodyne wash," may be used, with great advantage, and will prevent pain and inflammation in all common cases. In some parts of the country, the people have a custom of applying to a recent bruise, or burn, a cataplasm of fresh cow-dung. I have often seen this applied to severe contusions, occasioned by blows, falls, and bruises, and to severe burns, and I never knew it to fail to have a good effect.

When the bruise is very violent the patient ought to be bled as soon as a return of pulsation is felt at the wrist; it may also be well in severe cases to apply leeches to the part. The bruised part must be bathed, as directed above; and a poultice made by boiling crumbs of bread, elder flowers, and camomile flowers, in equal quantities of vinegar and water, applied to it. This practice is peculiarly proper when a wound is joined to the bruise. It may be renewed two or three times a day.

As the structure of the vessels is totally destroyed by a violent bruise, there often ensues a great loss of substance, which produces an ulcerous sore. If the bone be affected the sore will not heal before the diseased part of the bone separates and comes through the wound. This is often a very slow operation. Hence, it happens, that these sores are of ten mistaken for the king's evil, and treated as such, though in fact they proceed solely from the injury which the solid parts received from the blow. If such ulcerated bruises have continued so long as to become constitutional, cleansing internal remedies must be used, together with proper applications to the sore. If its sides have become dead and inactive, stimulating fomentations and ointments are necessary to give it life, and a healthy appearance; when this takes place, simple emollient dressings only should be used, taking care that the air be kept from the sore.

As a wash for foul sores and to promote healing, a decoction of witch-hazle bark, with a little of the "balsam of life" mixed in it, is very serviceable.

ULCERS.

Ulcers are either *constitutional* or *local*. Local ulcers are such as are caused by an external hurt, and are not fed and kept alive by impurities in the system. Nature generally heals these, readily, in her own time; and all else that is required is to keep the parts clean,

soft, and shut close from the air, with simple ointments. These may, however, continue so long from mis-management or neglect, as to become constitutional, requiring general remedies.

Constitutional ulcers may be occasioned by whatever produces bad blood and vitiated humors ; as scrofulous diseases, the venereal disease, ill-cured fevers, &c. Also a scorbutic acrimony, impoverished blood, sedentary life, poor living, moist air damp ground, working before a fire, as baking, &c.

These ulcers serve as drains, which carry off the impurities generated in the system by disease ; and we must not attempt to heal them till the system is properly cleansed, and the cause removed.

If the sore discharges pus, or thick matter, purifying syrups must be used. If the matter discharged is of a thin acrimonious quality, in addition to the cleansing remedies, we should make use of strengthening tonics, and such medicines as give weight, warmth, and activity to the blood.

The sore should be kept clean and healthy. If there is fungous or proud flesh, apply the *green salve*, or something similar ; if it is foul, and smells very disagreeable, antiseptic poultices, as charcoal and yeast, arse-smart, and if necessary, fish-worms, should be applied, to purify and sweeten it. Stimulating washes and powders are serviceable, if the ulcer has become callous and insensible ; as bayberry, in powder or decoction ; zanthoxylum, in decoction ; witch-hazle, &c. But while the sore continues soft, lively, and appears well, all that is necessary is to keep it so with soft ointments, and with the proper administration of internal remedies, Nature will heal it up as soon as it can be done soundly.

DISEASES OF WOMEN.

Women in all civilized nations, have the management of domestic affairs, and it is very proper they should, as Nature has made them less fit for the more active and laborious employments. This indulgence, however, is generally carried too far ; and females, instead of being benefitted by it, are greatly injured from the want of exercise and free air. To be satisfied of this, one need only compare the fresh and ruddy looks of a milk-maid, with the pale complexion of those females whose whole time is spent within doors. Though Nature has made an evident distinction between the male and the female with regard to bodily strength and vigor, yet she certainly never meant either that one should be always without, or that the other should be always within doors.

The confinement of females, besides hurting their figures and complexion, relaxes their solids, weakens their minds, and disorders all the functions of the body. Hence proceed obstructions, indigestion, flatulence, abortions, and the whole train of nervous disorders. These not only unfit women for being mothers and nurses, but often render them whimsical and ridiculous. A sound mind depends so much upon a healthy body, that when the latter is wanting, the former is rarely to be found.

It may always be observed, that women who were chiefly employed without doors, in the different branches of husbandry, gardening, and the like, were almost as hardy as their husbands, and that their children were likewise strong and healthy. But as the bad effects of confinement and inactivity upon both sexes have been already shown, we shall proceed to point out those circumstances in the structure and design of females, which subject them to peculiar diseases, the chief of which are, their *monthly evacuations*, *pregnancy*, and *child-bearing*. These, indeed, cannot properly be called diseases; but from the delicacy of the sex, and their being often improperly managed in such situations, they become the source of innumerable calamities.

THE MENSTRUAL DISCHARGE.

Females generally begin to menstruate about the age of fourteen, and leave it off about forty-five, which renders these two periods the most critical of their lives. About the first appearance of this discharge, the constitution undergoes a very considerable change, generally indeed for the better, though sometimes for the worse. The greatest care is now necessary, as the future health and happiness of the female depend in a great measure upon her conduct at this period. If a girl about this time of life be confined to the house, kept constantly sitting, and neither allowed to romp about, nor employed in any active business, which gives exercise to the whole body, she becomes weak, relaxed, and puny; her blood not being duly prepared, she looks pale and wan; her health, spirits and, vigor decline, and she sinks into an invalid for life. Such is the state of numbers of those unhappy females, who, either from too much indulgence, or their own narrow circumstances, are at this critical period denied the benefit of exercise and free air.

A lazy, indolent disposition proves likewise very hurtful to girls at this period. One seldom meets with complaints from obstructions amongst the more active and industrious part of the sex; whereas the indolent and lazy are seldom free from them. These are in a manner eaten up by the *green sickness*, and other diseases of this nature. We would therefore recommend it to all who wish to escape these calamities, to avoid indolence and inactivity as their greatest enemies, and to be as much abroad in the open air as possible.

Another thing which proves very hurtful to girls about this period of life, is unwholesome food. Fond of all manner of trash, they often indulge in it till their whole humors are quite vitiated. Hence ensue indigestions, want of appetite, and a numerous train of evils. If the fluids be not duly prepared, it is utterly impossible that the secretions should go properly on. Accordingly we find that such girls as lead an indolent life, and eat great quantities of trash, are not only subject to an obstruction of the menses, but likewise to glandular obstructions, as the scrofula, king's evil, &c.

A dull disposition is also very hurtful to girls at this period. It is a rare thing to see a sprightly girl who does not enjoy good health, while the grave, moping, melancholy creature proves the very prey

of vapors and hysterics. Youth is the season for mirth and cheerfulness; let it therefore be indulged; it is an absolute duty. To lay in a stock of health in time of youth, is as necessary a piece of prudence, as to make provision against the decays of old age. While, therefore, wise Nature prompts the happy youth to join in sprightly amusements, let not the severe dictates of hoary age forbid the useful impulse, nor damp with serious gloom the season destined to mirth and innocent festivity.

Another thing very hurtful to females about this period of life, is straight clothes. They are fond of a fine shape, and foolishly imagine that this can be acquired by lacing themselves tight. Hence, by squeezing the chest, stomach and bowels, they confine the lungs, choke the stomach and bowels, and occasion incurable maladies I know many females who will through life feel the dreadful effects of this wretched custom, of squeezing every girl into as small a size in the middle as possible. Human invention could not possibly have devised a practice more destructive of health.

After a female has arrived at that period of life when the menses usually begin to flow, and they do not appear, but on the contrary, her health and spirits begin to decline, we would advise, instead of shutting the poor girl up in the house, and dosing her with steel, assafœtida and other nauseous drugs, to place her in a situation where she can enjoy the benefit of fresh air and agreeable company. There let her eat wholesome food, take sufficient exercise, bathe the lower part of her abdomen daily with spirits, and amuse herself in the most agreeable manner; and we have little reason to fear, but Nature, thus assisted, will do her proper work. Indeed, she seldom fails, unless the fault is on our own side.

This discharge in the beginning is seldom so instantaneous as to surprise females unawares. It is generally preceded by symptoms which foretel its approach; as a sense of heat, weight, and dull pain in the loins; distention and hardness of the breasts; headach, loss of appetite, lassitude, paleness of the countenance, and sometimes a slight degree of fever. When these symptoms appear about the age at which the menstrual flux usually begins, every thing should be carefully avoided which may obstruct that necessary and salutary evacuation, and all means used to promote it; as sitting over the steam of warm water, drinking pennyroyal or other warm teas, &c.

After the menses have once begun to flow, the greatest care should be taken to avoid every thing that may tend to obstruct them. Females ought to be exceedingly cautious of what they eat and drink at the time they are out of order. Every thing that is cold, or is apt to sour on the stomach, ought to be avoided; as fruit, buttermilk, and such like. Fish and all kinds of food that are hard of digestion, are also to be avoided. As it is impossible to mention every thing that may disagree with individuals at this time we would recommend it to every female to be very attentive to what disagrees with herself, and to carefully avoid it.

Cold is extremely hurtful at this particular period. More of the sex date their diseases from colds caught while they are out of order, than from all other causes. This ought surely to put them upon their guard and to make them very circumspect in their conduct at

such times. A degree of cold that will not in the least hurt them at another time, will at this period be sufficient entirely to ruin their health and constitution. Violent passions or affections of the mind, as anger, grief, fear, &c. often occasion obstructions, and should therefore be avoided.

From whatever cause this flux is obstructed, except in a state of pregnancy, proper means should be used to restore it. For this purpose we would recommend sufficient exercise in a dry, open air, wholesome diet, and if the body be weak and languid, generous liquors; also cheerful company and all manner of amusements. If these fail, recourse must be had to medicine.

When obstructions proceed from a weak and relaxed state of the solids, such medicines as tend to promote digestion, to brace the solids, and assist the body in preparing good blood, ought to be used. For this purpose, I have made use of the *tonic tincture* with invariable success. The iron and myrrh pills, also, will generally have the desired effect. The other principal medicines are, warming and strengthening bitters and tonics; as motherwort, unicorn root, centaury, tansy, beth root, southernwood, &c. with wine. If it is accompanied with spasms, or nervous symptoms, anti-spasmodics may be united with the above medicines; as motherwort, ginger, valerian, cloves, nutmegs, the mother's cordial, &c.

If a cold is the cause of obstructions, bathe the parts with spirits, and place the patient over the steams or fomentations of warm water, or of spirits. Also give diluting teas, as pennyroyal, camomile, brooklime, &c. or the fever powders.

Previous, however, to the use of these medicines, it may be advisable to give an emetic, for the purpose of cleansing the stomach, and freeing it from acidities and inactive fluids.

When obstructions proceed from a viscid state of the blood, or in women of a gross or full habit, evacuations, and such medicines as thin the humors, are necessary; as cleansing syrups, diluting drinks, &c.

An obstruction of the menses is often the effect of other maladies. When this is the case, instead of giving medicines to force the discharge, which might be dangerous, we ought by all means to endeavor to restore the patient's health and strength. When that is effected, the other will return of course.

It sometimes happens in young girls, that the hymen is imperforate, or that the vagina is grown up, thereby rendering it impossible for the menstrual discharge to be effected. This may be suspected when the menses do not appear at the usual time, and a bloating of the lower region of the abdomen takes place, accompanied with other symptoms of obstruction. When this is the case, puncturing the imperforate part, is all that is necessary.

A safe maxim to be observed in all cases of obstruction of the menses, is, *never to force a discharge*. This flux is Nature's business: it proceeds from her abundance, and not from her deficiency. When the system is healthy and free, and every part well balanced, this salutary overflow is the consequence. But when there is a deficiency of blood, and laxity, coldness, and debility of the system, it does not appear, because Nature cannot spare it. How preposterous,

then, is the practice of giving steel, savine, ergot, and other forcing medicines, when the system is in this enfeebled state. Rather let us strengthen and prepare the functions of the body to do their own work.

IMMODERATE FLOW OF THE MENSES.

The menstrual discharge may be too great as well as too small. When this happens, the patient becomes weak, the color pale, the appetite and digestion are bad, to which swellings of the feet, dropsies, and consumptions often ensue. It is also accompanied with laxity of the muscular fibre, lank hair, flabbiness of the flesh, fainting, &c.

If after abortion, parturition, or if the patient is above forty-five years of age, it must be very profuse to prove dangerous. If the age is about thirty, and it is succeeded by a spontaneous and total suppression, it often proves fatal. If of long continuance, and always immoderate at the periodical returns, and the patient under forty, it cannot be restrained too soon.

The Cure.—As the cause is almost invariably weakness of the solids, deficiency of heat, and want of elasticity in the fibres of the mouths of the vessels which open into the womb, the practitioner, when this is the case, cannot be at a loss for the remedies. The tone of the system must be restored, by tonics and astringents, and such medicines and diet as brace the solids. Among these are, beth root, colombo root, orange peel, unicorn, elixir vitriol, and other acids; astringent drinks, as of oak bark, sweet-bugle herb, gum kino, crane's-bill, rose water, &c. Astringent injections must also be used if the case requires. A cloth dipped in vinegar may be laid across the loins.

When the case is urgent, nearly all practitioners who have written on this subject propose blood-letting by way of *revulsion*: such a practice cannot be too much execrated. A vomit is a more speedy, more effectual, and far safer remedy, as it tends to restore an equilibrium in the circulation.

The treatment of this disease must be varied according to the cause. When it is occasioned by any error in the patient's regimen, an opposite course to that which induced the disorder must be pursued, and such medicines as have a tendency to restrain the flow, and counteract the morbid affections of the system whence it proceeds. If the humors are viscid, give such things as thin the blood, and determine to the surface.

When a female experiences severe pains, as in travail, upon the occasion of her periodical flux, the *mother's cordial* will give great relief.

THE FLUOR ALBUS, OR WHITES.

What is usually called the *whites*, is a very common disease, and proves extremely hurtful to delicate women. It is caused by a laxity of the fibres of the mucus glands in the vagina; suppression of the menses, sprains in the loins, hard labor, excessive purging, bleeding, venery, blows, falls, weakness of the solids, &c.

The symptoms are, a constant oozing from the external orifice, of a white matter, sometimes thin, yellow, or brown; fœtid sensation of heat in making urine, fainting fits, loathing of food, pain in the back and loins, increased by exercise, wasting away of the flesh, dejected countenance. Sometimes the matter discharged is sharp and corrosive; sometimes foul and stinking.

This disease is easy of cure. Women are generally troubled with it a great while before they apply for assistance: to this natural bashfulness they owe more bad consequences than they ever suspected. It is often productive of many dreadful disorders, which might with great facility have been prevented; as consumptions, falling down of the womb, internal ulcers, barrenness, dropsy, &c.

THE CURE.—The cold bath, also the most nourishing diet is necessary, as milk, meat broths, shell fish, and such like A breakfast of two drachms of isinglass, boiled in milk, is of great use. The clove jelly may be taken continually, and will be found very serviceable.

Astringent and healing washes and injections are likewise necessary, to brace up the relaxed mouths of the glands. Oak bark decoction is perhaps as good as any for this purpose; it may be tinctured with the "balsam of life," as also may be all other washes used for this purpose. Other astringents are likewise proper, as the tormentil, crane's-bill, sweet bugle, marsh-rosemary, alum, &c. The witch-hazle decoction is not inferior to any of the above.

As a general internal remedy, I usually make use of the "*female syrup*" which will be found among the recipes This is peculiarly applicable to the cure of this disease; and when properly used, in conjunction with the necessary washes, rarely fails of removing it entirely.

Preparations of iron, with bitters, are also applicable to the cure of this complaint.

CESSATION OF THE MENSES.

(Commonly called the "Turn of Life.")

That period of life at which the menses cease to flow, is likewise very critical to the sex. The stoppage of any customary evacuation, however small, is sufficient to disorder the whole frame, and often to destroy life itself. Hence it comes to pass, that so many women either fall into chronic disorders, or die about this time. Such of them, however, as survive it without contracting any chronic disease, often become more healthy and hardy than they were before, and enjoy strength and vigor to a very great age.

If the menses cease all of a sudden, which is seldom the case in women of a full habit, they ought to abate somewhat of their usual quantity of food. They ought likewise to take sufficient exercise, and keep the body open. This may be done, by taking once or twice a week, a little rhubarb in wine or brandy.

It frequently happens that a schirrus or cancerous affection of the womb takes place on the stoppage of the menstrual flux; and in women of a gross habit, it is very common at this period of life to

have ulcerous sores break out about their ancles, or in other parts of their body.

To cure which, as well as prevent these and all other chronic affections which this important change in the constitution is apt to engender, and carry women safely through it, it is my general practice to give cleansing and alterative decoctions and syrups. These, judiciously administered, will often prove of incalculable advantage, without being attended with any risk, and frequently prevent a train of ills which otherwise would render the remainder of the life of many a female a scene of misery.

BEARING DOWN OF THE WOMB.

This complaint consists in a change in the situation of the womb, in which it falls much lower than it ought to do; in some cases absolutely protruding without the vagina. This complaint is of frequent occurrence—more frequent than is generally suspected, even by the sufferers themselves. Many females within my knowledge have been afflicted with this disorder for years, and at the same time constantly taking medicine for almost every other complaint, without either themselves or their physicians having the least suspicion of the real difficulty, until I afterwards convinced them of it by *examination*. False delicacy in females, or modesty in the physician, often prevents the necessary means of ascertaining the presence of this disorder. Such conduct is very unprofitable to all concerned, and is productive of wrong applications of medicine.

Causes.—In married women, the most frequent causes are; the forcible (though needless) plucking away of the after-birth, neglect of properly replacing the parts after delivery, and other gross mismanagement in child-bed; frequent miscarriages, too early exercise after delivery; immoderate venery, the whites, general and local debility. In the unmarried, it is apt to come on from violent exertions, such as dancing, jumping, riding, lifting heavy weights, &c. while out of order.

Symptoms.—The disease comes on generally with an uneasy sensation in the loins whilst standing or walking, accompanied now and then with a kind of pressure or bearing down. By disregarding these feelings, the woman at length is incapable of making urine without first pushing up the swelling; and if the complaint continues to increase, the womb swells, and is actually forced out of the parts, and takes on the form of a bulky substance hanging between the thighs. The patient also experiences severe pains shooting to the small of her back and sides, and down the thighs, with frequently a numbness in the thigh and leg of the affected side. If suffered to continue, it is productive of many distressing symptoms which undermine the constitution, disturb the functions of the stomach and bowels, and impair the nervous system.

The Cure.—The womb should be carefully raised to its place, and means used to keep it there, particularly a bandage girt tightly

around the lower part of the abdomen, and passing between the legs. Examination should be made by the physician, as often as every other day, to know that it is in its place, and if not, he should replace it with his finger. All straining or laborious exercise should be avoided.

After the womb has become diseased or affected with schirrus or scrofula, internal cleansing remedies must be used, and the part should be syringed often with a decoction of camomile, or of bitter-sweet, plantain, and spikenard, and such like. These are more particularly necessary, if the womb has become schirrous, or hard and inflamed. When it is soft, and the parts greatly relaxed, warm astringents and stimulants should be used for injections, as directed in the whites.

When this disorder is accompanied or caused by general and local debility, the treatment should be the same, mostly, as is directed in the whites. The "*female syrup*" will be found very strengthening, and must not be omitted.

Pessaries of silver, may be sometimes used with advantage in severe cases of falling of the womb, to keep it up to its place; but it is much better to strengthen the vagina and parts with bracing astringent injections, till they gradually acquire sufficient tone to retain their places, than to resort to these. Wooden and wax pessaries ought never to be inserted.

A diseased and morbid condition of the womb may take place in maids who have reached the age of twenty-five or thirty, without sexual intercourse, from mere inactivity of the womb and parts of generation, by which its juices stagnate and become corrupted. The only method of removing this is by creating an action, to effect which, marriage would probably be the most adviseable means, when it is practicable.

GREEN SICKNESS.

The *green sickness*, as it is commonly called, is a distemper that attacks females generally before puberty, and sometimes (if there be no eruption of the menses) long afterwards. It is also termed white fever, and the virgin disease.

Causes.—A deficiency of vital heat, acid in the stomach, viscidity and vitiation of the blood, pining, inactivity, dyspepsia, too profuse secretion of the pancreatic juice, deficiency of bile, &c.; obstructions, and stagnation of the fluids.

Symptoms.—A sallow, pallid, or livid countenance; laxity of the muscular fibres, inflated eyelids, swelling of the ancles, and sometimes of the abdomen; indolence, aversion from exercise; the breathing difficult and panting; headach, a palpitation of the heart, green stools, sour breath and depraved appetite.

This chronic disorder is sometimes of long continuance, without producing any remarkable ill consequences; sometimes schirrosities proceed from it: it is rarely difficult of cure. Menstruation

generally carries it off. Feeding on chalk, tobacco pipes, and such like, is not the cause, but the effect of the disease.

THE CURE.—The regimen should be the same as in weakness of the solids. An emetic is very proper to commence with. Afterwards give aromatics, tonics, and bitters, alkalies, &c. The *tonic tincture* is of great service, as it infuses vigor and animation into the system. Ginger, pepper, cloves, nutmegs, and such like, are proper. Bitters, as myrrh, gentian, unicorn root, centaury, camomile, galangal, birthwort, Orange-peel, &c. are also appropriate. Anti-spasmodics and emmenagouges may be necessary, in some cases.

DISEASES OF PREGNANCY.

THOUGH pregnancy is not a disease, yet it is a state often attended with a variety of complaints which merit attention, and which sometimes require the assistance of medicine. Some women, indeed, are more healthy during their pregnancy than at any other time; but this is by no means always the case; many of them being frequently indisposed during the whole or greater part of the time of their gestation. Few fatal diseases, however, happen during this period; and hardly any except abortion that can be called dangerous.

During a state of pregnancy, three different stages evidently exist, each of which has a distinct set of symptoms; nor need we be surprised when we come to consider the alteration the constitution suffers as a consequence of impregnation, at the many complaints and irregularities which then arise. The first state of pregnancy is usually attended with a suppression of the menstrual flux, accompanied with nausea and frequent vomiting, particularly in the morning; heartburn, indigestion, peculiar longing, headach, giddiness, toothache, and sometimes a slight cough; the breasts become enlarged, shooting pains extend through them, and the circle round the nipple alters to a dark brown color. A feverish tendency, with debility, emaciation, irritability and peevishness of temper, and a total alteration of countenance, every feature of which becomes sharpened, also frequently occur. During the whole or greater part of the second stage of gestation, as well as the first, the vomiting will continue with some women; this, however, does not usually happen.

Partial suppressions of urine, with frequent inclination to void it; itching about the external parts of generation, costiveness, inclination without ability to go to stool, and the piles, are what women are mostly incommoded by during the second stage.

QUICKENING.—Most women quicken about the sixteenth week after conception, at which time the mother becomes sensible of the slightest efforts of her child; and besides the complaints above enumerated, she will then be liable to sudden fainting, and slight hysteric affections. During the last three months, or third stage of pregnancy, general uneasiness, restlessness, (particularly by night,)

costiveness, puffy swellings of the feet, ancles, and private parts, cramps in the legs and thighs, difficulty of retaining the urine for any length of time, swellings of the veins of the belly and lower extremities, and the piles, are the affections which usually prove most troublesome. In delicate and weak women, of an irritable habit, convulsive fits sometimes arise, which are ever to be regarded in a dangerous point of view.

Nausea and vomiting.—These symptoms most frequently arise on getting out of bed in the morning; under such circumstances, therefore, it is advisable for the patient never to rise until she has taken a cup of coffee or tea. Should the vomiting at any time become so severe as to threaten abortion from the violence of the straining, it may then be advisable to take a little alkaline drink. Or, the patient may take frequently ten or fifteen drops of elixir vitriol in a draught of strong mint tea. Opiates and anti-spasmodics may be necessary.

It sometimes happens that vomiting continues incessantly for many days, accompanied with great prostration of strength, and constant thirst, with, at the same time, an utter impossibility of retaining any thing on the stomach. Under these circumstances, a gentle emetic, as of blood root, may be given with safety and advantage. Afterwards, chicken broth, taken in small quantities, would be a very proper diet. If the patient should be very thirsty, she may drink weak peppermint or cinnamon water. Applications may also be made to the pit of the stomach as directed in the treatment of vomiting.

Heartburn.—When a pregnant woman is incommoded with heartburn, half a drachm of magnesia may be taken night and morning; or, the sal æratus and rhubarb mixture, tinctured with peppermint or cinnamon water; this I have found to be the most efficacious of all remedies for the removal of this distressing complaint.

Headach with plethora.—When either drowsiness, a sense of fulness in the vessels of the head, or headach, proves troublesome to pregnant women, the head may be bathed with the "anodyne wash;" or, if that should not procure relief, taking away a few ounces of blood from the arm, in a robust woman will most likely prove serviceable.

Costiveness, piles, &c.—Costiveness, partial suppression of urine, and the piles, which attend pregnancy, are occasioned by the great pressure of the womb upon the rectum and bladder. The first and last of these symptoms are to be obviated by the daily use of some gentle laxative, as manna, senna, castor oil, and such like; or what is better, clysters.

Toothach.—As a matter of prudence, I have uniformly refused to perform the operation of burning in the ear, for this affection, during pregnancy. We must, therefore have recourse to palliatives. The zanthoxylum, or toothach bark, chewed, will rarely fail of giving

relief; at the same time the head should be kept cool with the "anodyne wash." Other things, as oil of juniper, cloves, pepper, &c. may also be used as palliatives.

LONGING.—Whatever is craved may be given with safety; and ought, by all means to be procured as soon as possible, otherwise women are apt to miscarry, from the anxiety it occasions.

HYSTERICS.—Should sudden fainting, or any other hysteric affection arise, little more will be necessary than to expose the patient to a free open air, to place her in a horizontal position, and to give her a glass of cold water with a few drops of hartshorn, or a little wine in it.

DIARRHŒA—During pregnancy, should be treated the same as at any other time.

SUPPRESSION OF URINE.—To relieve the suppression of urine that frequently takes place in the advanced state of pregnancy, besides making use of fomentations, clysters, and gentle purgatives, as castor oil, &c. the patient may at the same time drink plentifully of diluent and diuretic drinks, as tincture of cleavers, oil of pumpkin seeds, &c. In very severe cases, a catheter may be necessary to draw off the urine.

TROUBLESOME ITCHINGS.—When these sensations arise about the parts of generation during the pregnant state, it will be proper to keep the body perfectly free with some cooling laxative, and to wash the parts three or four times a day with milk and water, or a solution of sugar of lead.

PUFFY SWELLINGS of the feet, ancles, and private parts, which are apt to arise towards the end of pregnancy, are occasioned by the pressure of the womb on the returning vessels, which prevents the blood from being carried back to the heart. These swellings generally come on towards night, and disappear in the morning. Gentle purges may be used, together with fomentations, diuretics, diaphoretics, &c. In general, however, it will only be necessary to keep the patient at rest, with her legs as much in a horizontal position as possible.

CRAMPS OF THE LEGS AND THIGHS, are to be relieved by rubbing the parts with cold vinegar; camphor dissolved in oil, or other liniments, the person wearing stockings in bed. In my practice, however, I usually make use of the "*mother's cordial*," which gives relief, in most cases. At an advanced period of pregnancy, the cause of these cramps is only to be removed by parturition.

RESTLESSNESS AND WANT OF SLEEP, prove troublesome complaints towards the latter end of pregnancy, obliging the patient to rise frequently throughout the course of the night, in order to expose herself to the influence of cool air. In cases of this nature,

nothing affords relief so effectually and completely as the "*mother's cordial.*" The virtues of this preparation, in such cases, may be estimated from the fact, that no woman who has once used it, would be deprived of it when again in a like condition, for any consideration whatever.

VARICOSE VEINS.—Considerable enlargement and distention of the veins of the legs, thighs and abdomen, often take place to an alarming extent in the last state of pregnancy. But as no bad consequences have been observed to attend this state, the only thing necessary to be done, is to relieve the vascular system by gentle purging, and a spare diet. If it becomes troublesome, bandages may be applied.

JAUNDICE.—Pregnant women, in some instances, are afflicted with a pain in the side, excessive sickness at the stomach, and retchings, the skin assuming a deep yellow tint; under which circumstance, alone, the complaint proves distressing. It is usually caused by gallstones obstructing the regular passage of the bile. The most efficient means of relieving the patient from this degree of the complaint, are, fomentations to the parts pained, with the *fever powders*, or opium, with laxatives.

INCONTINENCY OF URINE is to be relieved only by delivery. A horizontal posture, and the use of a large sponge will in some measure relieve this troublesome affection.

PAIN IN THE LOINS.—If from the weight of the fœtus, let it be supported with a bandage. Rest is necessary.

OVER DISTENTION OF THE SKIN.—The skin of the abdomen, in the latter months of pregnancy, will sometimes become cracked and sore. In this case nothing is more effectual than the frequent use of warm oil by friction, to which a little camphor may be added.

FALSE PAINS, resembling those attendant on actual labor, are apt to come on at a late period of pregnancy, often occasioning unnecessary alarm. A free use of the "*mother's cordial*" will soon put an end to them. It allays all spurious pains, and keeps the patient perfectly easy, till the actual labor comes on in good earnest.

CONVULSIONS may take place either during pregnancy or labor. These are of different kinds. One species is in consequence of great exhaustion from tedious labor, excessive fatigue, and profuse hemorrhage, which makes its attack without much previous warning, and generally alternates with faintings, or great depression of strength and debility: the muscles about the face and chest are principally affected, while the face is pale, the eyes sunk, and the extremities cold. The fits succeed each other rapidly, and if not relieved will soon terminate in a fatal swoon. In all cases of this nature, the first object should be directed towards restraining the flooding, if present, or preventing any kind of exertion, thus husbanding the re-

maining strength, or recruiting it by cordials. Camphor, castor, musk, and opium will be of considerable use. In delivery it is usually necessary.

Other species of convulsions, which are those of an hysterical nature, are more common during gestation, than parturition. In this case anti-spasmodics are necessary.

To sum the whole, in relation to these convulsions, I have reason to believe that a proper use of the "*mother's cordial*," both previously and present, will prevent and relieve them altogether. During an extensive practice of many years in these disorders, I have not had as olitary case of convulsions, anywise troublesome, where this invaluable cordial had been used. The cranberry, or cramp bark, alone, is very effectual in relieving cramps and spasms of this description.

ABORTION.

Every pregnant woman is more or less in danger of abortion. This should be guarded against with the greatest care, as it not only weakens the constitution, but renders the woman liable to the same misfortune afterwards. Abortion may happen at any period of pregnancy, but is most common in the second or third month, sometimes it happens in the fourth or fifth. If it happens in the first month, it is usually called a false conception. If after the seventh month, the child may often be kept alive by proper care.

This and every other disorder to which a woman during the state of her pregnancy is liable, is chiefly owing to a deficiency of heat and blood, which may be easily gathered from the consideration of the expense she is at for the nutrition of the fœtus, and the formation of its appurtenances; if two ounces of blood were drawn every day from a person ever so healthy, for forty weeks together, let it be left to common sense to determine whether such an one can stand in need of supernumerary blood-letting during that time.

It is upon this account that their faces appear so thin, their noses pinched in, and various disorders attack them which originate from a deficiency of blood. If a woman with child is bled, says Hippocrates, a miscarriage is endangered: the larger the fœtus, the more certain and expeditious will be the abortion. Experience confirms the truth of this observation of the divine old man. I knew many ladies who used blood-letting during their pregnancy, and miscarried: but, on the omission of it, went out their full time, and were delivered of healthy children. That all do not miscarry who are bled is true, and indeed nothing is more to be wondered at than the inexhaustible resources of Nature, by which she can recover herself from the consequences of such ill-timed evacuations. To use blood-letting because her periodical visits disappear, is absurd and childish, for it cannot be a manly argument that we ought to lavish away that fluid which Nature demonstrates her want of by her care to preserve it. Bleeding, in a word, is always hazardous and improper during pregnancy, and not seldom brings on convulsions and death. To this rash and inexcusable imprudence it is owing that such numbers of women who even go their full time, die in child-bed.

The common causes of abortion are: the death of the child; weak-

ness or relaxation of the mother; great evacuations, as of blood-letting; violent exercise; lifting, reaching, jumping or stepping from an eminence; vomiting; coughing and convulsion fits: blows, and falls; fevers; disagreeable smells, indolence, high living, or the contrary; disappointments of that which was longed for, and violent passions of the mind.

The signs of approaching abortion, are, pain in the loins, or about the bottom of the belly; a dull heavy pain in the inside of the thighs; a slight degree of coldness, or shivering; sickness; palpitation of the heart: the breasts become flat and soft; the belly falls; and there is a discharge of blood or watery humors from the womb.

If Nature is not counteracted, or disturbed by unnecessary interposition, there is seldom any danger to the mother. If the fœtus is dead, (which may be known by fainting fits, cold sweats, flushings, rigor, or the fœtus falling from side to side,) nothing but mild emmenagogues, as the "*mother's cordial*," brooklime, cohush, &c. should be given once or twice a day. It may continue in the womb three or four weeks without any ill consequences, and it scarcely ever exceeds that time before Nature effects its expulsion.

To prevent abortion, we would advise women of a weak or relaxed habit to use solid food, avoiding great quantities of tea, and other weak and watery liquors; to rise early and go soon to bed; to take frequent exercise in the open air, but to avoid fatigue; and never go abroad in damp foggy weather, if they can help it. Women of a full habit ought to use a spare diet, avoiding strong liquors, and every thing that may tend to heat the body, or increase the quantity of blood. The diet should be of an opening nature. Every woman with child ought to be kept cheerful and easy in her mind. Her appetites, even though depraved, ought to be indulged to their extent, and I never knew any ill consequences to arise from it.

When any signs of abortion appear, the woman ought to be laid in a bed, or on a mattress, with her hips raised, and her head low. She should be kept quiet, and comforted; avoiding all heating things. Her food should consist of broths, rice and milk, jellies, gruels, and the like, all of which ought to be taken cold, especially if there is flooding present.

The "*mother's cordial*," may be depended upon in all cases of threatened abortion, as a preventative, where prevention is possible. It relaxes all spasms and pains, and puts the patient at perfect ease. I have often given this cordial when an abortion was endangered, from a fall or injury, and the patient was writhing under the most excruciating pain, and it rarely fails to give complete relief in twenty or thirty minutes.

If the woman be seized with a violent looseness, let her take small doses of the sal æratus and rhubarb mixture. If she be affected with vomiting, let her take the same, or, for common drink, crust coffee. Opiates, or other anodyne, as the extract of hops may be of service sometimes; but when the "mother's cordial" is used, these can be dispensed with.

Sanguine, robust women, who are liable to miscarry at a certain time of pregnancy, ought always to take a moderate purge, as of rhubarb, a few days before the period arrives; and if symptoms of

abortion appear, notwithstanding, they should take the "cordial" constantly with the "female syrups," as much as is necessary, till the threatened danger is averted. Many women who were in the constant habit of aborting at a certain period, by the use of this medicine have gone out their full time without the least difficulty. By this means, and observing the regimen prescribed, they may escape the misfortune of miscarriage.

Though we recommend due care for preventing abortion, we would not be understood as restraining pregnant women from their usual exercise. This would generally operate quite the contrary way. Want of exercise not only relaxes the body, but induces a plethora, or too great a fulness of the vessels, which is one principal cause of abortion.

When there is much pain or inflammation attendant upon threatened abortion, the "anodyne wash" may be applied with advantage.

When abortion cannot be prevented, the next indication is to conduct the patient safely through the process, by directing our immediate attention to the hemorrhage. Astringent injections, composed of alum, oak bark, crane's-bill, kino, &c. and cold applications to the loins, are often employed in floodings; and when the hemorrhage is slight, these will immediately prove beneficial; but in floodings without any remission, they do not appear calculated to afford much relief. In such cases it will be well to trust to the formation of a coagulum; enjoining rest, giving an anodyne at bed time, and keeping the bowels open with some gentle laxative. But if these means have not the desired effect, and the woman becomes exposed to imminent danger, an emetic, as of lobelia, may be given: the benefit of vomits in this case would seem to be, to drive the circulation into the extremities, and produce an equilibrium of action throughout the system. After this, powerful astringents may be administered internally; as gum kino, from eight to ten grains, repeating the dose every three or four hours, according to the urgency of the case. The sweet-bugle, crane's-bill, and such like, are also equally applicable. In the mean time, clysters must be used to keep the bowels open, and as soon as the hemorrhage is stopped, give a dose of castor oil. Cold applications to the back and external parts must not be neglected. The introduction of a smooth piece of ice into the vagina, has often a very speedy effect in arresting the flooding; but should not be continued so long as to cause pain. The administration of fox-glove has often an excellent effect in this species of hemorrhage.

Other precautions are to be attended to: cool air should be allowed to circulate in the patient's chamber; keeping the heat of the body at a low temperature; absolute rest in a horizontal position, which must be continued during the whole process; and cold acidulated liquors for common drink.

Sometimes the hemorrhage is kept up by some portion of the contents of the womb remaining partly within and partly without its cavity; when this is the case, it should be removed by careful manual interference, or with a pair of forceps.

For some days after abortion, the patient should be confined to her bed, as getting up too soon is apt to produce a debilitating dis-

charge. Women disposed to abort, should the more sedulously avoidthe exciting causes of abortion, at those times when it is most apt to take place, and guard themselves against it by a proper use of the "*mother's cordial.*"

MANAGEMENT OF CHILD-BED WOMEN.

Many diseases proceed from the want of due care in child-bed; and the more hardy part of the sex are apt to despise the necessary precautions in this state. This is peculiarly the case with young wives. They think, when the labor-pains are ended, the danger is over; but in truth it may only then be said to be begun. Nature, if left to herself, will seldom fail to expel the fœtus; but proper care and management are certainly necessary for the recovery of the mother. Great mischief, however, may be done by too much, as well as by two little care. Hence females who have the greatest number of attendants in child-bed, generally recover the worst. But this is not peculiar to the state of child-bed. Excessive care always defeats its own intention, and is generally more dangerous than none at all.

During actual labor, nothing of a heating nature ought to be given. The woman may now and then, take a little panada, toast and water, gruel, and such like. Spirits, wines, cordial-waters, and other things which are given with a view to strengthen the mother, and promote the birth, for the most part only tend to increase the fever, inflame the womb, and retard the labor. Besides, they endanger the woman afterwards, as they occasion violent and mortal hemorrhages, or dispose her to child-bed fevers.

PARTURITION, OR DELIVERY,

Is that natural process, which, at the expiration of forty weeks from conception, is matured, and by which the womb detaches and expels its contents, and returns nearly to the same condition in which it was previous to its impregnation.

CLASSIFICATION OF LABORS, &c.

The division of labors, originally made by Hippocrates into *natural* and *preternatural*, is sufficiently comprehensive, whilst it forcibly recommends itself by its simplicity and perspicuity.

Natural labor, supposes three things: 1. That the crown of the head presents. 2. That there shall be sufficient room in the pelvis to admit of the ready descent of the child in that direction which permits the back part of the head to emerge under the arch of the pubis. 3. That there be parturient energy adequate to the expulsion of the contents of the womb without manual interference; and without danger, either to the mother or child; and, 4. That the process of delivery be completed within a moderate time.

STAGES OF LABOR.

CERTAIN occurrences take place during the progress of delivery, which may be managed under three divisions, or stages; the *first* comprehends all that may occur, before the complete dilatation of the orifice of the womb; the *second* includes all that takes place between the developement of the neck of the womb, and the expulsion of the child; the *third* embraces every thing connected with the detachment and expulsion of the placenta, or afterbirth, and its adherent membranes.

Symptoms preceding labor.—For several days before the actual existence of labor, there are certain premonitory symptoms, which, by women who have borne children, are viewed as precursors of that eventful hour which many of them so much dread. Among these are,

Restlessness, particularly at night, which frequently precedes delivery for days and weeks. The "*mother's cordial*" effectually calms and alleviates this troublesome accompaniment, and admirably prepares the woman for a quick and astonishingly easy delivery, in comparison with that of those who have not made use of this preparation.

Subsidence of the womb and abdomen, is not an unusual monitor of the approach of suffering. It may be viewed favorably, inasmuch as it indicates room in the pelvis.

A glairy mucus secretion from the neck of the womb and vagina, popularly termed *show*, sometimes occurs for days before the more urgent symptoms of labor. It is often streaked with blood, and seems to lubricate the parts concerned in parturition.

Irritability of the bladder and rectum, demanding their frequent relief, is another occasional sign of labor.

Symptoms accompanying labor.—Owing to the resistance which the womb encounters during its contractile efforts, *pain* follows every such contraction; but the pain attendant on parturition differs very materially in its nature, and in its influence in the womb. These paroxysms of pain are either *intestinal* or *uterine*.

Paroxysms of intestinal pain, or such as are termed false or spurious, may be distinguished from genuine labor-pains, by being unconnected with contractions of the womb; by attacking different parts of the abdomen; and by recurring irregularly. These pains originate in some source of intestinal irritation, and almost always may be removed by emptying the bowels, and administering the "*mother's cordial.*"—This determines immediately whether they are *true* or *spurious* pains, for if the latter, they will be presently quelled.

The true pains are either dilating or expulsive.

Dilating pains, or as they are popularly termed, *grinding* pains, result from the contraction of the womb. They are principally confined to the back, and occur in the earliest stage of labor, and are often peculiarly distressing to the patient, who expresses herself by restlessness, despondency, and moaning. They sometimes continue a

long time without the intermissions being free from uneasiness, and appear almost exclusively to dilate the mouth of the womb, having little influence over the body of the womb.

When the mouth of the womb is considerably dilated, expulsive pains, sometimes termed *forcing*, or bearing down pains, commence in the loins and gradually proceed round the abdomen, till they meet at the region of the pubes, and dart down the labia and thighs. If the accoucheur's hand be placed on the flaccid sides of the abdomen, previous to the accession of a paroxysm or bearing down pain, before the woman is aware of it, the womb may be felt contracting to a hard, tense, incompressible tumor. These pains observe regular intervals of ease, which become shorter, whilst the pains, in an inverse ratio, increase in their duration and severity; and now it is that the abdominal muscles and diaphragm afford their assistance.

During each propulsive effort a larger portion of the membranes, distended with the liquor of the egg, is forced through the mouth of the womb, performing to it, and all the parts through which the child is to pass, the office of an easy but powerful wedge. With these pains there is often a frequent disposition to empty the rectum; and sometimes this inclination is so harassing as to require the administration of a small clyster, with half a drachm of the tincture of opium.

Vomiting is a common attendant on parturition pains. It principally occurs during the dilating pains, and unquestionably assists in the relaxation and dilatation of the mouth of the womb. If this vomiting should continue severe, after the mouth of the womb is sufficiently dilated, and a substance like dark coffee grounds is ejected, means must be used to allay it.

The process of natural labor.—The process of natural labor is at once so simple and beautiful, that it cannot fail to excite the admiration of those who look beneath the surface of the operations of nature. Without repeating what has already been advanced respecting the accompanying symptoms of delivery, we shall merely call to mind those statements as constituting a part of the history of this process. The symptoms which announce the commencement of natural labor having continued for an indefinite length of time; pains in the loins, darting through the pelvis, with an appearance of *show*, indicate the approach of unequivocal evidences of this stage of parturition. From time to time these pains are of the *dilating* kind, and on an examination by the vagina will be found to be diminishing the thickness of the neck of the womb more than to be opening its mouth. When the neck of the womb becomes reduced to the thickness of the other parts of that organ, it begins to open, and as soon as it can admit the extension of any part of the membranes distended with the liquor, the pains rather assume the *expulsive* character, and there will be a sensible bearing down of the whole uterine tumor. Successive paroxysms of pain dilate the mouth of the womb more and more, whilst the protruded membranes, distended like a tense bladder, fill up the opening, and perform the office of an inimitable wedge, till the womb and the entrance to it form one continous passage. Soon after this the membranes burst

during a strong pain, having previously contributed to the dilatation of the vagina; and with the escape of the *waters* there is sometimes a temporary suspension of pain, and the head of the child falls into the upper aperture or brim of the pelvis, or descends into the cavity; but more frequently this advance is not made until several pains have followed this occurrence.

The contractions of the womb recurring with augmented frequency and force, gradually propel the fœtus along the passages, until the head presses on the fork, or soft part separating them from the anus, which is put on the full stretch; and also against the soft parts which it protrudes. These by degrees dilate, and permit the back part of the head to emerge under the arch of the pubes, and with the complete protrusion of the head, the other parts of the body are expelled, sometimes by the same pain, but more frequently by the one which speedily follows.

The same pain that expels the child, now and then detaches and expels the placenta or after burthen, commonly so called; but more frequently the womb remains at rest for about a quarter of an hour, when it resumes its contractions, and throws it off with the adherent membranes.

This constitutes the interesting process of natural labor, in which the womb requires no officious interference, but which, when forced to submit to any, she often resents, by harrassing the busy meddler with some untoward occurrence.

All that it becomes necessary for the accoucheur to do during this interesting process of natural labor is to support the fork by his hand, covered smoothly with a soft napkin, and so applied as to give it an equable support, without in the slightest degree resisting the exit of the head. No other interference, in natural labor, is justifiable, and too strong terms cannot be employed to reprobate the practice of hastening the birth of the body, dragging it forcibly by the head into the world. It should be left to be expelled by the unaided contraction of the womb. One or two precautions, however, are necessary; when the head has come into the world, we should endeavor to bring the shoulders into the passage during the same pain, otherwise the external orifice might contract around the neck of the child, and create difficulty. Afterwards, when the bulk of the child is passed, we should not suffer it to be thrown out suddenly, but withdraw it slowly, in order that the womb may contract gradually.

As soon as the child is thus brought into the world, and manifests unequivocal signs of life, the navel-string must be tied, with a string or piece of tape, at about the distance of three inches from the navel, and again tied at about three inches distant from the first. The naval-string may then be cut with a pair of scissors, between these ligatures. All this should be done in the most delicate manner, under the bed clothes, without exposing either the mother or child.

The navel-string being thus secured, and the child separated from the mother, it is to be transferred to the nurse, whilst the bandage, previously placed round the body of the mother, should be moderately tightened, or the womb supported by gentle pressure, which will be found very materially to aid its efforts to detach and expel the placenta.

Management of the after birth.—The management of the placenta constitutes a very important part of natural labor; and if the womb be not permitted to empty itself gradually, some untoward and alarming circumstances may occur in this stage of delivery. Generally from fifteen to thirty minutes elapse between the birth and the expulsion of the placenta. The woman then complains of a slight pain in the back or abdomen, and this secondary, contraction of the womb detaches the placenta, although it but rarely expels it from the passages; whence, however, it may usually be easily removed; by coiling the cord round two of the fingers of the right hand, whilst, guided by the cord, the thumb and index finger of the other hand should be passed up to its insertion in the placenta, which, if it can be felt, is a pretty certain indication of the detachment of the whole mass from the sides of the womb. By this means, also, the navel-string is prevented from breaking off, and a firmer hold of the placenta is obtained.

To prevent the possibility of inverting the womb, or from its occurrence without our knowing it, the placenta should be permitted to slip by the fingers of the left hand into the vagina; and the withdrawing of it should always be done in the easiest and most gentle manner possible. The hand of the accoucheur should afterwards be laid on the abdomen, and the forefinger introduced into the vagina, to ascertain, whether the womb is well contracted, and in its natural place. This is of much consequence, as by neglect of it, inflammations take place in the womb which often prove fatal. The pulse should now be felt, lest internal hemorrhage, redistending the womb, may be going on, to the endangering of the patient's life.

It is of great importance that a bandage be passed over the region of the womb; this being done, a napkin should be applied wet with spirits or vinegar to the external parts. The woman should then have her soiled linen withdrawn; and if she be able, and there is no flooding present, she should stand on her feet, or walk a few steps, which will assist in discharging off the clotted blood that may remain unexpelled, and tend to prevent after pains. She may then be put in bed, without any exertions of her own, and some light food given her in small quantities, when she may be left to rest.

Tedious Labors.—When the labor proves tedious and difficult, it will generally prove a sufficient relief to give the woman freely of the "*mother's cordial.*" This will allay the irritating, fruitless, and false pains, and preserve the strength of the patient for a more powerful and successful effort, which will arrive in due time, and must not be hurried. If inflammation should take place in any part of the abdomen, the "anodyne wash" should be applied. An emollient clyster ought frequently to be administered. If the pulse seems to sink, and the woman is greatly exhausted, a draught of generous wine, or some other cordial, may be given, but not otherwise. If stronger anti-spasmodics are necessary, castor, musk, &c. may be administered. Warm camomile teas may also be injected into the womb, and cloths wrung out in it applied to the lower belly. Lubricating oils, or fresh butter, applied to the parts, are also of use.

In what is termed a *dry birth*, *i. e.* where the membranes have broken and the waters are discharged previous to the commencement of parturition, delivery is rendered more difficult. When this is the case, the camomile, and oils, as recommended above, are more peculiarly necessary.

DIFFICULT LABORS.—This includes every labor in which the process is prolonged beyond twenty-four hours, the head of the child presenting.

Labors are rendered difficult by the inert or irregular action of the womb—which may be caused by too great a distention of the womb; partial action of the womb; rigidity of the membranes; imperfect discharge or dribbling of the waters; shortness of the navel-cord; weakness of the constitution; fever; want of a due degree of irritability; passions of the mind; or, general deformity.

Labors are rendered difficult by the rigidity of the parts to be dilated—which may proceed from the first child; advancement in age; too early rupture of the membranes; oblique position of the mouth of the womb; fever or local inflammation; extreme rigidity of the neck of the womb; and uncommon rigidity of the external parts.

Labors are rendered difficult from disproportion between the dimensions of the cavity of the pelvis and the head of the child—which may be caused by the original smallness of the pelvis; distortion of the pelvis; head of the child unusually large, or too much ossified; head of the child enlarged by disease; face inclined towards the pubis or front bone; presentation of the face; the head presenting with one or both arms.

Labors are rendered difficult by diseases of the soft parts—as suppression of urine; stone in the bladder; excrescences of the neck of the womb; cicatrices in the vagina; adhesion of the vagina; tumors; enlargement of the ovaria; rupture of the womb.

NOTE. The unwarrantable and over-officious disturbance of the natural progress of labors, and especially the premature rupture of the membranes, is the most general cause of difficulties in parturition.

Women are to be relieved in difficult labors, by a free use of the "*mother's cordial*," as before directed; by time and patience; by encouragement to hope for a happy event; by regulating their general conduct; by lessening or removing the obstacles to the effects which should be produced by the pains; and (the last resort) by the use of instruments.

The intentions in the use of instruments, are—1. To preserve the lives both of the mother and child. 2. To preserve the life of the mother. 3. to preserve the life of the child.

The instruments commonly used for the purposes of delivery, are, the *forceps*, together with bandages.

There are three things to be considered with respect to the *forceps*, and to the use of instruments in general, viz.: to make an accurate distinction of those cases which require their use: of those

cases which allow of their use: and of the manner in which they ought to be used.

We are in the first place to speak of the application and use of the *forceps*.

Directions and admonitions in the application and use of the Forceps.

It has long been established as a general rule, that instruments are never to be used in the practice of midwifery; the cases in which they are required are therefore to be considered merely as exceptions to this general rule. Such cases, however, seldom happen; and when they do, no instrument is ever to be used in a claudestine manner.

The first stage of labor must be completed, that is, the mouth of the womb must be dilated, and the membranes broken before we think of applying the forceps. The intention in the use of the forceps is, to preserve the lives both of the mother and child, but the necessity for using them must be decided by the circumstances of the mother only. It is meant, in the use of this instrument, to supply with it the insufficiency or want of labor pains; but so long as the pains continue, we have reason to hope they will produce their effect, and shall be justified in waiting.

Nor doth the cessation of pains always prove the necessity of using the forceps, as there may be a *total* or a *temporary* cessation of the pains. In the former, the pulse, the countenance, and the general appearances of the patient, indicate extreme debility, and resemble those of a person worn out with disease or fatigue; but in the latter, there are no alarming symptoms, and the patient often enjoys short intervals of refreshing sleep.

Every rule for the time of applying the forceps, or for preventing its rash and unnecessary use, must be subject to the judgment of the person who may have the management of any individual case. It may be well, however, generally to wait at least six hours after the cessation of pains, before we allow of their use. Yet, care should be taken that we do not, through an aversion to the use of instruments, too long to delay that assistance we have the power of affording with them.

The difficulties which attend the application and use of the forceps, are far less than those of deciding upon the proper time when, and the cases in which, they ought to be applied. The lower the head of the child has descended, and the longer the use of the forceps is deferred, the easier in general will their application be, the success of the operation more certain, and the hazard of doing mischief less. The forceps should always be applied over the ears of the child; it must therefore be improper to apply them when we cannot feel an ear; but when an ear can be felt, by a common examination, the case is always manageable with the forceps, if the circumstances of the mother require their use. The ear of the child, which can be felt, will be found towards the front bone; as the ears are not turned to the sides of the pelvis till part of the hind head has emerged under the arch of the front bone, when the use of the instruments can be very seldom required.

When you have determined on using the forceps, and explained the necessity of using them to the patient and her friends, she is to be placed in the usual position, on her left side, near the edge of the bed; and the instruments, warmed in water and smeared with some oily application, are to be laid conveniently by you.

The following rules are given on the presumption that the head of the child presents, with the face inclined, or verging towards the hollow of the sacred bone, and that the common short forceps are to be used; but if any other kind of forceps should be preferred, the rules must be adapted to the instrument.

Application.—First, carry the fore finger of the right hand to the ear of the child. Then take the blade of the forceps to be first introduced, by the handle in the left hand, and conduct it between the head of the child and the finger already introduced, till the point reaches the ear. The farther introduction must be made with a motion resembling a slight degree of semi-rotation, and the point of the blade must be kept close to the head of the child, by gently raising the handle as the instrument is advanced. The blade of the forceps must be carried up till the lock reaches the external parts, near the lower edge of the pubes. If the introduction of either of the blades is hindered, we must withdraw them a little to discover the obstacle, and never strive to overcome it with violence.

When the first blade is introduced, it must be held steadily in this situation, as it will be a guide to the introduction of the second blade, which must be introduced in the same cautious manner as the first, till the lock reaches the fork, or soft parts below. When the second blade is properly introduced, its situation will be opposite the first.

In order to lock the forceps, the handles of which are at a considerable distance from each other, the blade first introduced must be brought down, and carried so far back that it will lock with the second blade, held in its first position; care being taken that nothing be entangled in the lock of the forceps, by carrying the finger round it. It is convenient to tie the handles together when locked, with force sufficient to keep them from sliding or shifting their position. Should the handles come close together, probably the bulk of the head is not included between them, and therefore, when we act with them, might slip: or, if the handles, when locked, are at a great distance from each other, they are not well applied, and may slip. But in these estimations, allowance must be made for the different dimensions of the heads of children.

The forceps will never slip if judiciously applied, if the case be proper for their use, and we act circumspectly with them. The difficulties in their application arise from attempting to apply them too soon; from passing them in a hurry, or in a wrong direction; or from entangling the soft parts of the mother between the instrument and the head of the child. Of course, we are always to be guarded against these circumstances.

Use.—There is no occasion, and it would be hurtful to attempt to change the position of the head, when the forceps are applied, before we begin to extract, for if the action be slow, the head of the child

will turn in the same manner as in a natural labor. Therefore the instrument must also change its position according to the descent, and the handles be gradually turned from the front bone and sacred bone, where they were first applied, to the sides of the pelvis; the handles will also be raised, as the child advances towards the front bone.

The first action with the forceps must be to bring the handles, firmly grasped in one or both hands, slowly towards the pubes, till they come to a full rest. After waiting till the pains return, or an imaginary interval if there should be a total want of pain, the handles are to be carried back again to the *perinæum*, or fork, in the same cautious manner, using at the same time a certain degree of extracting force. The subsequent actions must be from handle to handle, or occasionally by simple attraction; but that action of the blade which was towards the *pubes* must be stronger and more extensive throughout the operation, than the action of the other blade, which has no fulcrum to support it.

By the repetition of these actions, always directed according to the position of the handles, with their force increased, diminished, or continued, according to the exigence of the case, we shall in a short time perceive the head of the child descending: when this is the case, the force of the action with the forceps must be abated, and as that advances, the direction of the handles must change by degrees more and more to each side, and towards the *pubes*. The lower the head of the child descends, the more gently we must proceed, in order to prevent any injury or laceration of the fork, or external parts, which must be supported as in natural labors.

In some cases, the mere excitement occasioned by the application of the forceps, or the very expectation of their being applied, will bring on a return or an increase of the pains sufficient to expel the child without their assistance. In other cases we are obliged to exert considerable force, and to continue it for a long time; so that one operation may be safely and easily finished in twenty minutes, or even a less time, and another may require more than an hour for its completion, and the repeated exertion of very considerable force. In some cases it happens also, that the obstacles to the delivery exist at one particular part of the pelvis, and when that is surmounted, the remainder of the operation will be easy; but in other cases there is some difficulty through the whole course of the pelvis.

Before the exertion of much force, we are always to be convinced that a moderate degree of force is not equal to our purpose. In every case in which the forceps have been applied, they are not to be moved before the head is extracted, even though we might have little or no occasion for them; but when the head of the child is born, they are to be removed, and the remaining circumstances managed as if the labor had been natural.

NOTE.—It would be very desirable that every student should have an opportunity of seeing the operation with the forceps performed before he goes into practice; but that is not always possible. Yet if he has been properly instructed in the principles of the application and use of the forceps, reflects seriously before he determines on the

operation, and proceeds slowly but not timidly in it, he can hardly fail to succeed. Hurry in any operation, is a very common sign both of want of information and of fear.

Many times, when the pains have died away without expelling the child, and although the pelvis is sufficiently capacious for its passage, the power of Nature seem to be insufficient for the effort, I have seen the delivery effected almost instantaneously by stopping the breath of the woman with the hand, or a gag, and producing a partial strangulation. The struggle and commotion thus created has never failed, in my knowledge, of expelling the child. This will appear a harsh method—but in an extremity the means must be adequate to the end. The breathing, however, must not be stopped over a minute, lest it be beyond recovery; and as soon as the head appears, it should be desisted from; taking care to use restoratives, as in fainting, to revive the woman.

OF PRETERNATURAL LABORS.

The presentation of children at the time of birth may be of three kinds, viz. 1. With the head. 2. With the breech, or lower extremities. 3. With the shoulder, or upper extremities.

Presentations of the first kind are called natural; those of the second and third kind, preternatural.

The signs of preternatural presentations are very uncertain, and cannot be determined till we are able to feel the presenting part. We may then form our judgment by the following marks: The head may be distinguished by its roundness, firmness, and bulk; the breech may be known by the bulk, the cleft between the buttocks, and by the parts of generation. The foot by its length, by the heel, the shortness of the toes, and the want of a thumb; and the hand by its flatness, by the thumb, and the length of the fingers.

In the *first order* of preternatural presentations are included, the breech, one hip, the knee, and one or both legs. Such labors are not to be interrupted, but allowed to proceed as if the presentation were natural; unless the necessity of giving assistance should arise from some circumstance independent of the presentation. By acting on this principle, when the breech of the child is expelled by the pains, the parts are sufficiently distended to allow the body and head to follow without any danger from delay; whereas, if the feet were brought down in the beginning of labor, the difficulty with which it would be expelled or could be extracted, increasing as it advanced, the child would probably die before the woman was delivered, and she would be in danger of suffering mischief.

In first labors, the child, unless it be small, will not unfrequently be born dead, when the breech or lower extremities present; but in subsequent labors, they will usually be born living, if no other untoward circumstance occurs. Injuries of the presenting part will sometimes occur, particularly of the penis and scrotum; but these, although alarming, will be soon recovered by a soothing treatment.

Should there be reason to think the child dead, or the powers of the mother insufficient to expel it, we must then give such assistance

as may be required. This may be given with the hand, or with a blunt hook or crotchet, hitched in the groin of the child; or by passing a ligature round the bent part of the child at the groin, with which we can hardly fail to extract it. But every assistance of this kind must be given with discretion, and we must first be convinced of the necessity before we interfere. Should a child presenting the breech advance but slowly, it is better to be satisfied with this slow progress, than to use violent efforts with the child; or we might break or dislocate the thigh bone, or separate the bones of the pelvis of the child, which might occasion future lameness.

In the *second order* of preternatural presentations are included the shoulders, the elbows, and one or both arms.

In all these presentations we shall be under the necessity of turning the child; but as they may be attended with circumstances widely different, it is necessary to make the following distinctions.

1. When the mouth of the womb is fully dilated, the membranes unbroken, or the waters lately discharged, an upper extremity being perceived to present before the womb is contracted.

In cases of this distinction, or whenever there is a necessity of turning a child, the patient is to be placed upon her left side near the edge of the bed, or when we expect much difficulty, in a prone position, resting upon her hands and knees. The position should be such as to allow us a free and dexterous use of our hands. The external orifice and vagina is then to be dilated with the fingers reduced into a conical form, acting with a semi-rotary motion of the hand; this dilatation must be made slowly, in imitation of Nature. The external orifice should be amply distended before the hand is carried farther, or it may contract around the wrist, and impede further operations. The hand must now be slowly conducted to the mouth of the womb, which being wholly or sufficiently dilated, the membranes must be broken, either with the finger or a grasp of the hand.

The hand must then be passed along the sides, thighs and legs of the child, till we come to the feet. If both feet lie together, we must grasp them firmly in our hand; but if they are distant from each other, and we cannot conveniently lay hold of both feet, we may deliver by one foot without much additional difficulty.

Before we begin to extract we must be assured that we do not mistake a hand for a foot. The feet must be brought down with a slow waving motion, into the pelvis, when we are to rest, and wait till the womb begins to contract, still retaining them in our hand. When the action of the womb comes on, the feet are to be brought lower at each return of pain, till they are extracted through the external orifice, and the labor may then be finished, partly by the efforts of the mother, and partly by art.

The most favorable position in this presentation, is when the toes of the child are turned towards the sacred bone, which brings the back of the child towards the belly of the mother; and all other positions of the child must be gradually turned to this, as the body is extracting. This position will be found advantageous in delivering the head.

When the feet of the child have passed through the external orifice, wrap them in a cloth, hold them firm, and wait till a pain comes on, during the continuance of which gently draw down the feet. When the pain ceases, rest, and proceed in this manner through the delivery, assisting the efforts of the patient, but not making the delivery wholly artificial.

When the breech reaches the external orifice, the child must be extracted slowly, and great caution observed, lest the soft parts below be lacerated. When the navel cord appears, a small portion of it is to be drawn out, to slacken it, and thereby lessen the chance of compression, or prevent the separation of it from the body of the child; after this the operation should be finished as speedily as possible with safety, if the circulation in the cord is obstructed.

If the child should stick at the shoulders, the arms must be successively brought down, by raising the body the opposite way, and successively bending them at the elbow very slowly, lest they should be broken, and the hand must be cleared towards the pubes. When both the arms are brought down, the body of the child must be supported upon our left hand placed under the breast, the fingers on each side of the neck, and the body supported upon our left arm. Then placing the right hand over the shoulders, and pressing with our fingers the head towards the sacred bone, we must ease the head gradually along, turning the body of the child as it advances towards the abdomen of the mother. If the head should not come easily away we must introduce the fore-finger of the left hand into the mouth of the child, by which the position of the head will be rendered more convenient. When the head begins to enter the external orifice, we must proceed slowly, and support the fork by spreading the fingers of the left hand over it.

In some cases there may be a necessity of extracting the child speedily in order to preserve its life; but we must also recollect, that the child is often lost by endeavoring to extract it too hastily. Throughout this operation, we should act with deliberation, assist Nature, move when she moves, and we cannot go wrong.

2. The second distinction is, when the membranes break in the beginning of labor, the mouth of the womb being a little dilated.

In the management of this we are first to ascertain the presenting part; and if, together with the arm, the head is perceived by a common examination, there may be no occasion to turn the child, such case only constituting a variety of natural labors.

But if the case should be such as to require the child to be turned, we should wait for the spontaneous dilatation of the mouth of the womb, unless urgent circumstances render assistance necessary, which should always be rendered in imitation of Nature. The mouth of the womb is always to be considered as completely dilated when we judge it will allow of an easy introduction of the hand.

When we have fixed upon the proper time and begin the operation, the external orifice must be dilated in the manner before advised. It is generally most convenient to pass the hand between the body of the child and the pubis, or front bone, the feet being most commonly found lying towards the belly of the mother.

In cases which come under this distinction, the womb is seldom

contracted very strongly upon the body of the child, but always in some degree. But the difficulties which may occur in the operation of turning the child, in these cases, will be fully explained under the following distinctions.

3. The third distinction exists, when the mouth of the womb has been fully dilated, the membranes broken, and the waters long discharged; the womb being at the same time strongly contracted, and the body of the child jammed at the upper aperture of the pelvis.

The difficulty in the management of these cases depends upon the degree of contraction of the womb, and upon the distance or awkward position of the feet of the child, but chiefly upon the former circumstance. The womb is in some cases contracted to a globular, and in others to a longitudinal form: and it is always easier, with an equal degree of contraction, to turn the child when the womb is in the globular form.

When we are called to a case of this kind, we should not form an opinion hastily, or proceed to deliver the woman immediately, until we understand the case by thorough examination. We shall be able to judge in what part of the womb the feet of the child lie, if we consider whether it be the right or left hand which presents, which may be known by the direction of the thumb and palm of the hand.

But the contraction of the womb is the principal difficulty to be surmounted, and the danger in turning the child is in proportion to the difficulty. This danger consists in rupturing the womb. The contraction of the womb is of two kinds; first, the permanent contraction, in consequence of the waters having been long drained off, which may occur when there has been little or no pain; and second, the extraordinary contraction arising from the action of the womb, returning at intervals, and always attended with pain.

The hand must be introduced with a degree of force sufficient gradually to overcome the permanent contraction of the womb, or the operation could never be performed: but we ought not to proceed in our attempt to turn the child while labor is present, and the womb is acting with violence, as the hand would be cramped, or the womb ruptured.

The action of the womb is rendered more frequent and strong in this stage, by the generally increased irritability of the patient. Therefore, before we attempt to deliver, it will be prudent to lessen this irritability. This will be effected by the free administration of the "*mother's cordial*," and by the use of clysters. Sleep, at this time is very favorable. We may now proceed to the delivery.

Without regarding the arm which presents, the hand must now be introduced in the manner before directed, and conducted slowly into the womb, if there be sufficient room. But if the child be jammed at the upper aperture of the pelvis, the hand cannot be introduced; we must then fix our fore-finger and thumb in the form of a crutch in the armpit of the child, and pushing the shoulders towards the head, and towards the body of the womb, we must raise the body of the child by degrees till there be room for the introduction of the hand. If while we are introducing our hand, we perceive a pain come, we must not proceed till that is abated. The hand should

also be laid flat during this contraction, lest the womb be injured by its action on the knuckles. In this manner we are to proceed, alternately resting and exerting ourselves, till we can lay hold of one or both feet.

There is sometimes much difficulty in getting to the feet, and in extracting them, especially when the womb is contracted in a longitudinal form. In such cases it is often convenient, when we can reach to the knees, to bend them cautiously, and bring down the legs and feet together. Before we begin to extract, however, we must be well assured that the parts we have hold of are the feet; and then we must extract them slowly and steadily, for if we hurry they may slip from us, and return again.

When the feet are brought down, if there be difficulty in extracting them, we must endeavor to slide a noose, first formed upon our wrist, over the hand, to secure the feet, by which the hazard of their return will be prevented, and the succeeding part of the operation much facilitated. When the noose is fixed over the ancles, we must pull by both ends of it with one hand, and grasp the feet with the other, but we must not attempt to proceed hastily. When there is afterwards much difficulty in extracting the child, it is probably owing to its body being jammed across the upper aperture of the pelvis. It will then be proper to pass the finger and thumb as before directed, to raise the shoulders and body of the child towards the body of the womb, with one hand, and with the other extract at the same time with the noose.

When the breech of the child has entered the pelvis, we must proceed with deliberation; but there will be little farther difficulty, except from the smallness of the pelvis, of which we shall speak in the next section.

4. The fourth distinction is, when, together with any of the circumstances attending the foregoing distinctions, there is a great disproportion between the size of the head of the child, and the dimensions of the cavity of the pelvis.

The degree of difficulty in these cases is greater or less according to the degree of disproportion; but the difficulty of extracting any part of the body of the child is little, compared with that which attends the extracting of the head. We will, therefore, suppose the body of the child to be brought down, but that the head cannot be extracted by any of the methods before recommended. The force with which we endeavor to extract, must then be increased, till it is sufficient to overcome the difficulty or resistance; beginning, however, with moderation, and gradually increasing our efforts, according to the exigencies of the case. This force should be exerted by intervals in the manner of natural pains.

If the head should not descend with the force which we judge can be safely exerted, we must rest, and give it time to collapse. We may then renew our attempts, extracting from side to side, or backwards or forwards, as may best conduce to ease the head through the distorted pelvis, alternately resting and endeavoring to extract. But if the head should descend in ever so small a degree, the force is not to be increased with a view of finishing the delivery expeditiously, but we must be satisfied with our success, and proceed circumspect-

ly. When the head once begins to descend, there is seldom much subsequent difficulty in finishing the delivery, as the cause of the difficulty usually exists at one particular part of the pelvis. Should the head rest several hours in this situation, no inconvenience would thence arise to the mother, and the longer it rested the greater advantage we should probably gain when we renewed our attempts to extract it.

It may be presumed, when the head of the child has been wedged in for a long time in the position we are supposing, and great force has been used to extract it, that there is little reason to expect the child should be born alive; yet such instances sometimes occur.

When we can hook a finger on the lower jaw of the child, the derection of the head may be changed to one more favorable; but we must not extract with so much force as to incur the hazard of breaking or tearing away the jaw. Pressing the head of the child from the pubes to the sacred bone, with the fingers and thumbs carried up as high as we can reach, will often be of great use in these cases.

If the difficulty of extracting the head arises from its enormous size, occasioned by some disease, as dropsy in the head, &c. these methods steadily pursued will answer our intention; as by a prudent use of the force in our power, the integuments will burst, or even the bones be broken. The necessity for the use of forceps very seldom occurs in these cases.

Under these circumstances, should it be absolutely necessary to lessen the head of the child, a perforation may be conveniently made behind either of the ears, or where we can most conveniently fix the point of the *perforator*. A portion of the contents of the head will then be evacuated, when the skull may be compressed to the required size.

Should the body be separated from the head by the force we have used, there will be no occasion, for this reason alone, to act hastily or rashly, as the head may even then be expelled by the pains. But if this should be impossible, or if it should be absolutely necessary to extract the head speedily, on account of the situation of the mother; then the general rules for lessening the head must be applied to this case, and the head may be confined to a proper situation by compressing the abdomen with a napkin passed across it, or by the hands of an assistant.

Familiar observations.—The physician should by all means ingratiate himself into the confidence of the woman, by kindness, indulgence, attention, even in trifling matters, and by appearing interested in her welfare; for want of confidence deranges every thing. Rough, bearish, and overbearing conduct is certain to disgust the woman, and frustrate all her efforts. The physician should recollect that this operation is peculiarly the business of Nature, and that his province is only that of her hand-maid, when she alone is unequal to the performance, but never to direct her.

The woman, if she have regard to cleanliness, should prepare herself for the occasion, by putting on clean linen, and fastening it up about her waist, while a sheet or other cloth should be fastened around her, reaching down far enough to protect the bed-clothes

from being soiled. After delivery, this is removed, and the clean linen suffered to drop down, which leaves her already prepared for rest. Another circumstance should also be attended to, which may prevent disagreeable consequences, that is, to empty the rectum and bladder of their contents, when labor is expected; otherwise the pressure of the fœtus might cause their evacuation during that period.

The woman should be allowed to choose her own position in which to be delivered, whether it be while lying on her back, or side; sitting on the edge of the bed, or in a chair; in a standing posture, or upon her knees. It will greatly assist the pains if the woman, having her feet braced, should have some convenience fixed to lay hold of with her hands and pull towards her breast, which will help to compress the abdomen and forward the expulsion. Holding the breath during a pain is also of service.

The navel cord should never be cut, or its circulation obstructed, till signs of life appears in the child, or till it breathes. If this does not take place soon, we should attempt to bring it to life, by spirting brandy on its breast and temples, and by blowing in its mouth and nostrils, at the same time compressing and dilating the chest as in the breathing. Friction with the warm hand, and bathing the bowels with spirits, may also be tried. When the child is freed from the mother, the attendant should wash it clean in warm water, and particularly under the arms, in the neck, &c,; and if it is faint and feeble, it may be slightly bathed with spirits. It should then be made dry, and dressed.

During the whole progress of the operation, the accoucheur should conduct himself in a calm and collected manner; for the eye of the woman is upon him, watching every change of his countenance, and auguring favorably or unfavorably of the termination, according as he appears confident or frustrated.

Conclusion.—I have devoted particular attention to the subject of midwifery, because, as I believe, no branch of the healing art has been, and is now, so generally abused in practice as this; and in no branch are the effects of mal-practice so severely felt. Thousands of women are literally torn to pieces, in delivery, and made miserable and decrepid forever afterwards, by the rash, unnatural and brutal management of practitioners, some of whom, on these occasions, fall at the unfortunate sufferer like famished wolves, and seem to think it their duty to drag the child into the world by main force, in almost all cases. Such conduct is outrageous, and cannot be too strongly condemned. Science, however useful in its proper place, can never supplant the powers of Nature, in bringing the child into the world, and whenever it is attempted, it is certain to frustrate and derange the process, endangering the lives of both mother and child. Therefore, never meddle, for it cannot be done with impunity.

Much may be done preparatory for this event, to mitigate its severity and remove all occasion for those dreadful apprehensions which a state of pregnancy excites in most females, and which are frequently but too well grounded. I cannot bring myself to believe that the sufferings, the injuries, and death which so many females undergo, are necessary consequences of the reproduction of our

species. Experience has told me the contrary. The Almighty never enjoined upon woman to be fruitful, and yet accompanied a compliance with this command with such imminent risk of life. No—it is *art*, officious, intermeddling art, too proud to follow even where Deity leads, that has inflicted this curse upon woman. Look at the native tribes—among them, the females, after making suitable preparations, deliver themselves alone, usually without any assistance, and immediately get up and go about their business. With them, injury or death from this process are never known. Among no uncivilized people is the birth of a child considered an event to be dreaded, or anywise dangerous or doubtful; it is only those females who are so unfortunate as to be cast within the pale of civilization, who are surrounded by the benefits of the science and skill of this enlightened age, who are doomed to suffer.

Pregnant women, in this country, and particularly those whose delicacy, or nervous irritability, subjects them to many of the trifling ailments consequent upon this state, are generally managed in the following manner: if any unusual feeling is perceived, although it is a perfectly natural consequence, medical advice must be had, and pills or potions follow. These agitate the system, increase the irritability, and render a recurrence of those complaints more certain. Bleeding then becomes necessary to quiet them, and this must be repeated frequently throughout the term. This, together with drugs, and low diet, enfeebles the mother, robs the child, and paves the way, either for abortion or for premature spurious pains, which no sooner take place than the practitioner commences pouring in forcing medicines, at the same time employing as much of his bodily strength as may be necessary to drag the child into the world.

If the woman survives this abominable treatment, and gets over it in months, she does well. If the child lives, after being thus driven into the world before it is matured, it requires the greatest care to enable it to drag along its puny, miserable existence; and from this beginning, followed up as is usually the case by continually stuffing it with drugs, this heir of trouble is ensured an after life of debility, imbecility and disease.

It is a consolation to know, that this humiliating scene of distress, which is so often witnessed, is not an inevitable or legitimate attendant upon child-bearing. It is for the most part *manufactured*—nursed along by a continual course of mistaken and unnatural treatment. This I know to be the fact from my own experience. During the whole course of my practice in midwifery (which no one will say has been limited) *I have not found a solitary case of difficult delivery.* Usually from two to six smart pains are sufficient to complete the process; and the ease and facility with which it is accomplished, often astonishes, as well as most agreeably disappoints, the anxious mother. But I claim no extraordinary credit or skill for producing this result: the merit of it consists in using no officious interference, giving few medicines, enjoining healthy exercise, and keeping her easy, and free from all harrassing and unpleasant spasms, pains and sensations, till the period of full fruition has arrived, when, as the strength is preserved and every thing prepared for the event,

delivery is accomplished in the beautiful and desirable manner in which Nature always accomplishes it, when properly assisted, or at least, undisturbed.

TREATMENT AFTER DELIVERY.—After delivery, the woman ought to be kept as quiet and easy as possible. Her food should be light and nourishing, and her drink cool. All heavy indigestible substances, such as buck-wheat pancakes, bacon, and the like, should be avoided till well. To this first rule, however, there are many exceptions. I have known several women, whose spirits could not be supported in child-bed without solid food and generous liquors. Sometimes an excessive flooding happens after delivery. In this, case the patient should be laid with her head low, and treated in the manner before directed for excessive flow of the menses.

In some instances, an obstruction or total suppression of urine takes place. This may be relieved by the administration of diuretics, as oil of pumpkin-seeds, cleavers, &c.

AFTER PAINS.—If there be violent pains after delivery, the patient should take a sufficient quantity of the "mother's cordial" to quell them. Or the patient may drink plentifully of warm diluting liquors, as tea with a little saffron in it; and take small broths, with caraway seeds. If she be low spirited, or troubled with hysterical complaints, and the above treatment is not sufficient, anti-spasmodics may be added.

COSTIVENESS.—Costiveness is apt to prevail after delivery, and should always be removed by a laxative clyster, or some gentle purgative, such as castor oil, rhubarb, or magnesia.

INFLAMMATION OF THE WOMB.—An inflammation of the womb is a dangerous and not unfrequent disease after delivery. It is known by pains in the lower part of the belly, which are greatly increased upon touching; by the tension or tightness of the parts; great weakness; change of countenance, a constant fever, with a weak and hard pulse; a slight delirium, or raving; sometimes incessant vomiting; a hiccup; a discharge of reddish, stinking, sharp water from the womb; an inclination to go frequently to stool; a heat, and sometimes total suppression of urine.

In this disorder, the bowels must be kept open by emollient clysters; cloths wet with the "anodyne wash" should be laid over the region of the womb, and re-wetting them as they become dry; and if there is delirium, the head may be bathed with the same. If there is a suppression of urine, the tincture of cleavers may be given. Camomile tea, the fever powders, or such like, may also become proper, to allay fever.

SUPPRESSION OF THE LOCHIA.—A suppression of the Lochia, or usual discharges of greenish matter, which continue for three or four days after delivery, and the *milk fever*, must be treated nearly in the same manner as an inflammation of the womb. In all these

cases, the safest course is plentiful dilution, gentle evacuations, and fomentations of the parts affected. In the milk-fever, the breasts may be embrocated with a little warm linseed oil, or the bittersweet ointment; or cabbage leaves may be applied to them. The child should be often put to the breast, or it should be drawn by some other person.

Nothing would tend more to prevent the milk-fever than putting the child early to the breast. The custom of not allowing the child to suck for the first two or three days, is contrary to Nature and common sense, and is very hurtful both to the mother and child. Every mother who has milk in her breasts, ought either to suckle her own child, or to have her breasts frequently drawn, at least for the first month. This would prevent many of the diseases which prove fatal to women in child-bed.

INFLAMMATION OF THE BREAST.—When an inflammation happens in the breast, attended with redness, hardness, and other symptoms of suppuration, the safest and most effectual application I have ever used, is the "bitter-sweet ointment," mentioned among the recipes. This quickly softens and gives relief. If suppuration be far advanced, poultices of bread and milk, softened with oil or fresh butter, may be applied till the tumor breaks, or is fit to open.

CHAPPED NIPPLES.—When the nipples are fretted or chapped, they may be anointed with a mixture of oil and beeswax, or the "bittersweet ointment," or a little powdered gum Arabic may be sprinkled on them. Should the complaint prove obstinate, a cooling purge may be given, which generally removes it.

CHILD-BED FEVER.—The most fatal disorder consequent upon delivery, is the child-bed fever. It generally makes its attack on the second or third day after delivery. Sometimes, indeed, it comes on sooner, and at other times, though rarely, it does not appear before the fifth or sixth day.

It begins, like most other fevers, with a cold or shivering fit, which is succeeded by restlessness, pain in the head, great sickness at the stomach, and bilious vomiting. The pulse is generally quick, the tongue dry, and there is a remarkable depression of the spirits and loss of strength. A great pain is usually felt in the back, hips, and region of the womb; a sudden change in the quantity or quality of the *lochia*, also takes place; and the patient is frequently troubled with a constant inclination to go to stool. The urine, which is very high colored, is discharged in small quantity, and generally with pain. The belly sometimes swells to a considerable bulk, and becomes susceptible of pain from the slightest touch. When the fever has continued for a few days, the symptoms of the inflammation usually subside, and the disease acquires a more putrid form. At this period, if not sooner, a bilious or putrid looseness, of an obstinate and dangerous nature, comes on, and accompanies the disease throughout its future progress.

There is no disease which requires to be treated with more skill and attention than this; consequently the best assistance ought to

be rendered as soon as possible. If signs of inflammation or swelling appear about the womb, the "anodyne wash" should be applied freely over the part, together with draughts to the feet.

During the rigor, or cold fit, proper means should be used to abate its violence, and shorten its duration. For this purpose the patient may drink warm teas, together with a moderate quantity of the *fever powders*, and if low, may take now and then a cup of winewhey; warm applications to the extremities may be used with advantage.

Emollient clysters ought to be frequently administered through the course of the disease. These prove beneficial by promoting a discharge from the intestines, and also by acting kindly as a fomentation to the womb and adjacent parts. To evacuate the offending bile from the stomach, gentle laxatives may be used, as vomits are too irritating. The medicine which I have always found to succeed best in this disease, is the mixture of sal æratus and rhubarb. This, if frequently repeated, will often put a stop to the vomiting, and at the same time lessen the violence of the fever. If it runs off by stool, or if the patient be restless, a few drops of laudanum may occasionally be added.

If the stools should prove so frequent as to weaken and exhaust the patient, a starch clyster, with thirty or forty drops of laudanum in it, may be administered as occasion shall require, and the drink may be spice bush bark tea, and the like. Should these be insufficient, recourse must be had to tonics, as colombo root, &c.

Though in general the food ought to be light, yet if the patient is greatly weakened, she must be supported with nourishing diet, and generous drinks. When the stomach will not bear any kind of nourishment, the patient may be supported, for some time by clysters of beef-tea or chicken-broth.

To avoid this fever, every woman in child-bed ought to be kept perfectly easy; her food should be light and simple, and her bed-chamber cool and properly ventilated. There is not any thing more hurtful to a woman in this situation, than being kept too warm. She ought not to have her body bound too tight, nor rise too soon after delivery; catching cold is also to be avoided; and a proper attention paid to cleanliness.

Milk fever.—To prevent the milk fever, the breasts ought to be frequently drawn; and if they are filled previous to the onset of a fever, they should upon its first appearance be drawn, to prevent the milk from becoming acrid, and its being absorbed in this state. Costiveness is likewise to be avoided. This will be best effected by the use of mild clysters and a laxative diet.

We shall conclude our observations on child-bed women, by recommending it to them, above all things, to beware of cold. Poor women, whose circumstances oblige them to quit their bed soon, should be particularly careful for a time. The better sort of women, however, run the greatest hazard, from over-nursing and too much heat. They are generally kept in a sort of bagnio for eight or ten days, and then dressed out to see company. The danger of this conduct must be obvious to every one. Public places, and churches, should not be the first place of resort after confinement.

OF BARRENNESS.

Barrenness may be very properly reckoned among the diseases of females, as few married women, who have not children, enjoy a good state of health. It may proceed from various causes, as high living, grief, relaxation, &c.; but it is chiefly owing to an obstruction or irregularity of the menstrual flux.

It is very certain that high living vitiates the humors, and prevents fecundity. We seldom find a barren woman among the laboring poor, while nothing is more common among the rich and affluent. The inhabitants of every country are prolific in proportion to their poverty; and it would be an easy matter to adduce many instances of women, who, by being reduced to live entirely upon a milk and vegetable diet, have conceived and brought forth children, though they never had any before. Would the rich use the same sort of food and exercise as the farmer or mechanic, they would seldom have cause to envy the poor the blessing of a numerous and healthy offspring while they pine in sorrow for the want of even a single heir to their extensive possessions.

Affluence begets indolence, which not only vitiates the humors, but induces a general relaxation of the solids; a state highly unfavorable to procreation. To remove this we would recommend the following course: First, if there is great vitiation of the humors, give a course of cleansing medicines; secondly, a diet consisting chiefly of milk and vegetables, together with sufficient exercise in the open air; thirdly, the use of corroborants, astringents, and aromatics, as the *clove jelly*, which I prefer, the *tonic tincture*, elixir vitriol, unicorn, colombo, beth root, and the like; and lastly, above all, the cold bath. If barrenness proceeds from the whites, or any other disease, that must first be removed.

Barrenness is often the consequence of grief, sudden fear, anxiety, or any of the passions which tend to obstruct the menstrual flux. When barrenness is suspected to proceed from affections of the mind, the person ought to be kept as easy and cheerful as possible; all disagreeable objects are to be avoided, and every method taken to amuse and entertain the fancy.

People should be on their guard against all dangerous stimulants that provoke desire; they enfeeble instead of strengthen the powers of Nature, and render a weakness, which proper treatment might have removed, absolutely incurable.

DISEASES OF INFANTS.

Miserable indeed is the lot of man in a state of infancy! He comes into the world more helpless than any other animal, and stands much longer in need of the protection and care of his parents: but alas! this care is not always bestowed upon him, and when it is, he often suffers as much from improper management as he would have done from neglect. Hence the officious care of parents, nurses and

midwives, become one of the most fruitful sources of the disorders of infants.

It must be obvious to every attentive person, that the first diseases of infants arise chiefly from their bowels. Nor is this in the least to be wondered at, as they are in a manner poisoned with indigestible drugs, and improper diet, as soon as they come into the world. Every thing that the stomach cannot digest may be considered as a poison; and unless it can be thrown up, or voided by stool, it must occasion sickness, gripes, spasmodic affections of the bowels, or what the good women call inward fits, and at last, convulsions and death.

As these symptoms evidently arise from somewhat that irritates the intestines, doubtless the proper method of cure must be to remove it as soon as possible. The most safe and effectual method of doing this is by gentle vomits, as the tincture of blood root, a little sweetened. A half tea-spoonful may be given at a dose, and repeated every ten minutes till it operates. This is perfectly safe, for any age. Gentle emetics will not only cleanse the stomach but will generally likewise open the b dy. Should this, however, not happen, and if the child be costive, some gentle purge will be necessary: for this purpose a little rhubarb, or manna, or such like, may be dissolved, or steeped in boiling water, and given in small quantities till it operates; or what will answer rather better, a few grains of magnesia may be mixed in any kind of food that is given to the child, and continued till it has the desired effect. If these medicines be properly administered, and the child's belly and limbs frequently rubbed with a warm hand before the fire, they will seldom fail to relieve those affections of the stomach and bowels, from which children suffer so much.

Carminatives and aromatics, as caraway, peppermint, cloves, &c. and sometimes anti-spasmodics, and anodynes, may be given with advantage in these gripes, spasms and fits of infants. The "children's cordial," mentioned among the recipes, will be found to answer almost every purpose in these affections.

These general directions will be found to include most of what can be done for relieving the internal disorders of infants. They will likewise go a considerable way in alleviating those which appear externally, as the *rash*, *gum*, &c. These are principally owing to too hot a regimen, and consequently will be most effectually relieved by gentle evacuations.

OF THE MECONIUM.

The stomach and bowels of a new-born infant are filled with a blackish colored matter of the consistence of syrup, commonly called *meconium*. This is generally passed soon after birth by the mere effort of Nature; in which case it is not necessary to give the infant any kind of medicine. But if it should be retained, or not sufficiently carried off, a little manna or magnesia, or what is better than all, a little urine, sweetened, may be given and will answer the purpose.

The most proper medicine for expelling the meconium is the mother's milk, which is always at first of a purgative quality. Were

children allowed to suck as soon as they show an inclination for the breast, they would seldom have occasion for medicines to discharge the meconium; but even where this is not allowed, they ought never to have daubs of syrup, oils, and other indigestible stuff, crammed down their throats.

THE THRUSH.

Thrush are little whitish ulcers affecting the whole inside of the mouth, tongue, throat, and stomach, of infants. Sometimes they reach through the whole intestinal canal; in which case they are very dangerous, and often put an end to the infant's life.

If the thrush are of a pale color, clean, few in number, soft, superficial, and fall easily off, they are not dangerous, but if they are opake, yellow, brown, black, thick, or running together, they ought to be dreaded. This disorder is caused by too hot a regimen, both of the mother and child. It is a rare thing to find a child who is not dosed with wine, punch, cinnamon water, or some other hot and inflaming liquor, almost as soon as it is born, afflicted with the thrush.

The proper medicines for the thrush are, such as destroy canker, and gentle laxatives. For the last purpose, rhubarb or magnesia may be given in small doses till they operate; the bowels must be kept open during the whole disease. To destroy the canker, gargles may be made of decoctions of gold-thread, sage, blackberry roots, or witch-hazle bark, all of which should be sweetened with honey. With these the mouth and throat should be washed and gargled, at the same time allowing the child to swallow a little. There is a little bulbous milky root, growing in various parts of the state of New-York, which I have known by the name of the *Rattle-snake root*, and has the first year, three single stems of about six inches in length, with a broad three-cornered leaf to each, and the second year runs up in a large reddish stalk from two to four feet high, bearing seed. This root is superior to any thing else I have ever known for destroying all kinds of canker in the mouth and bowels. As much as will lay upon a sixpenny piece may be steeped to a wine-glass full of water, sweetened, and a tea-spoonful given at a time, occasionally washing the mouth with it. Borax, mixed with honey, and rubbed in the child's mouth, is a popular remedy.

HICCUPS, ACIDITIES, AND GREEN STOOLS.

Some infants are much incommoded by hiccups, arising probably from acidity of the stomach. Most diseases of children are accompanied with evident signs of acidity, as green stools, gripes, &c.

These appearances have induced many to believe that the diseases of children were owing to an acid abounding in the stomach and bowels; but whoever considers the matter attentively will find that these symptoms of acidity are oftener the effect than the cause of their diseases.

Nature evidently intended that the food of children should be acescent; and unless the body be disordered, or the digestion hurt, by flatulency, or some other cause, we will venture to say that the

acescent quality of their food is seldom injurious to them. Acidity, however, is often a symptom of disorders in children; and, as it is sometimes a troublesome one, we shall point out the method of relieving it.

When green stools, gripes, purgings, sour smells, &c., show that the bowels abound with an acid, the child should have a little magnesia, with broth, given it; or the chalk julep, and the like. Compounds embracing aromatic carminatives, laxatives, and alkali, I consider as indicated in this complaint. Caraway, steeped with rhubarb, and a little soot tea added, has proved very effectual. The "children's cordial," perhaps combines all that is necessary in these cases. When the gripes and looseness are troublesome and obstinate, a little laudanum with gum arabic, will help to check it. All alkalies and absorbents given in these complaints, may be slightly combined with laxatives. Magnesia, uniting both these qualities, is well calculated for all cases of acidity. *Urine* is a very common remedy among many people for this species of complaints in children, and seldom fails to give relief.

When an infant is troubled with gripes, a little brandy may also be rubbed on its belly with a warm hand before the fire. This will usually relieve them, if accompanied with aromatics as directed above.

GALLING, OR CHAFING.

These are very troublesome to children. They happen chiefly about the groin and wrinkles of the neck, under the arms, behind the ears, and in other parts that are moistened by the sweat or urine.

As these complaints are, in a great measure, owing to want of cleanliness, the most effectual means of preventing them are, to wash the parts frequently with cold water, to change the linen often, and in a word to keep the child in all respects thoroughly clean. When this is not sufficient, the chafed parts may be sprinkled with absorbent or drying powders, as chalk, wheat or rye flour, scorched, and the like. If the parts become very sore, a weak solution of white vitriol, in spring water, may be used, or the witch-hazle decoction. Fuller's earth is equal to any other application.

STOPPAGE OF THE NOSE.

The nostrils of infants are often plugged up with a gross *mucus*, which prevents their breathing freely, and likewise renders it difficult for them to suck or swallow.

We may endeavor to remove this by exciting sneezing: the sternutatories will require to be blown or pushed into the nostrils, however. Besides this, the nose may be rubbed at bed time with a little sweet oil, or fresh butter. This resolves the filth, and renders the breathing more free, and little else is necessary to be given.

VOMITING AND LOOSENESS.

From the delicate state of children, and the great sensibility of their organs, a vomiting or looseness may be induced by any thing

that irritates the nerves of the stomach or intestines. Hence these disorders are much more common in childhood than in the advanced periods of life. They are seldom, however, dangerous, and ought never to be considered as diseases unless they are violent, or continue so long as to exhaust the strength of the patient.

When vomiting proceeds from an over quantity of food, it may be promoted by slight emetics, as tincture of bloodroot, than which nothing operates easier. If it proceeds from an increased sensibility of the stomach, alkalies, and tonics may be administered, tinctured with aromatics.

A looseness may generally be reckoned salutary, when the stools are sour, slimy, green or curdled. It is not the discharge, but the production of such stools that ought to be remedied. Even when the purging is thin and watery, it ought not to be checked too suddenly. To remove a severe looseness, an emetic will generally be proper, to lay the foundation; and afterwards, absorbents, alkalies, laxatives and aromatics, and anodynes, will be proper to correct the acrimony. From what has been said before, the practitioner will be able to gather the proper treatment.

CUTANEOUS ERUPTIONS.

Children, while on the breast, are seldom free from eruptions of one kind or other. These, however, are not often dangerous, and are never to be dried up, or healed externally, but with the greatest caution. They tend to free the bodies of infants from hurtful humors, which, if retained might produce fatal disorders.

The eruptions of children are chiefly owing to improper food and neglect of cleanliness. If a child be stuffed at all hours with food that his stomach is not able to digest, such food, not being properly assimilated, instead of nourishing the body, fills it with gross humors. These must either break out in form of eruptions upon the skin, or remain in the body and occasion fevers and other internal disorders. The children of the lowest class of people, and of all who despise cleanliness, are almost constantly found to swarm with vermin, and are generally covered with scab, itch, and other eruptions.

When eruptions proceed from any of the above causes, all that is necessary to be done is to observe thorough cleanliness, internally and externally, and give such medicines as purify, cleanse, and drive out the impure humors. Saffron, in decoction, is generally sufficient for this purpose in this species of cutaneous eruptions.

In more virulent eruptions and impurities of the system, as scabbed and scald-heads, or hereditary eruptive diseases, more powerful alteratives are required, as decoctions of sarsaparilla, burdock, yellow dock, &c., or the "*anti-mercurial syrup*," which will not disappoint expectation. The tar ointment is very suitable for the scald-head.

Chilblains commonly attack children in cold weather. They are occasioned generally by the feet or hands being kept long wet or cold, and afterwards suddenly heated. This occasions a rarefaction of the humors, and an infraction of the vessels, producing soreness. To remedy this, when the parts look red and swell, they should be

rubbed with mustard and brandy, or other heating, stimulating things; or an ointment of green tobacco in lard, may be applied.

OF THE CROUP, OR RATTLES.

CHILDREN are often seized very suddenly with this disorder, which, if not quickly relieved, proves suddenly mortal. It seems to be a species of asthma, attended with very acute and violent catarrhal symptoms.

This disease generally prevails in cold and wet seasons. It is most common in low marshy countries. Children of a gross and lax habit, are most liable to it. It generally attacks children in the night, after having been much exposed to damp cold easterly winds through the day. Damp houses, wet feet, thin shoes, wet clothes, or any thing that obstructs the perspiration, may occasion the croup.

It is attended with a frequent pulse, quick and laborious breathing, which is performed with a peculiar kind of croaking, or rattling noise, that may be heard at some distance. The voice is sharp and shrill, and the face generally much flushed, though sometimes it is of a livid color.

When a child is seized with the above symptoms, his feet should immediately be put into warm water, and afterwards draughts of garlic or onions applied to their soles. To break up the phlegm, give a blood root emetic, repeating it as often as necessary. Nothing can operate more beautifully or effectually than this, in breaking up the croup. Another article, with which I have often saved life in the last extremity, when the breath was almost totally stopped, is rattlesnake's oil: four or five drops given on sugar, is sufficient for a child of two years old at a dose. This cuts up the phlegm, and frees the passage almost instantaneously. Vinegar and horseradish may be given to great advantage. Wild turnip, skunk cabbage, demulcents, diaphoretics, and expectorants, are proper.

The Burgundy pitch plaster, worn continually between the shoulders, has a very happy effect in relieving this dreadful disorder, and preventing its return.

OF TEETHING.

IT has been supposed that above a tenth part of infants die in teething, by symptoms proceeding from the irritation of the tender nervous parts of the jaws, occasioning inflammations, fevers, convulsions, gangrenes, &c. These symptoms are in a great measure owing to the great delicacy and exquisite sensibility of the nervous system at this time of life, which is too often increased by an effeminate education. Hence it comes to pass, that children who are delicately brought up, always suffer most in teething.

About the sixth or seventh month, the teeth generally begin to make their appearance; first, the front-teeth; next, the dog-teeth; and lastly, the grinders. The seventh year there comes a new set; and about the twentieth, the two inner grinders, called the teeth of wisdom.

Children about the time of cutting their teeth, slaver much, and have generally a looseness. When the teething is difficult, espe-

cially when the dog-teeth begin to make their way through the gums, the child has startings in his sleep, tumors of the gums, watchings, gripes, green stools, the thrush, fever, difficult breathing, and convulsions. Children have been known to lose the use of an arm, or a leg, or of both, till the tooth was through, and then recover it immediately, without any medical assistance.

Difficult teething requires nearly the same treatment as an inflammatory disease. If the body be bound, it must be opened, either by gentle purgatives, or by clysters. Magnesia is very appropriate; if too much relaxed, the chalk julep may be given. Diluting teas, as of sage, balm, or elder flowers, should be used; to which may be added a fourth part of milk. Spirits of hartshorn, from five to fifteen drops every four hours, in a spoonful of water, will usually relieve. Burgundy pitch plasters may also be applied.

Cutting the gums to favor the passage of the teeth, is of great benefit, and may be employed in all cases where the gums offer much resistance to the teeth. This operation may be performed with a lancet, or any moderately sharp instrument, or even with the thumb or finger nails.

In order to render teething less difficult, parents ought to take care that their children's food be light and wholesome, and that their nerves be braced by sufficient exercise without doors, the cold bath, &c.

Infants, during dentition, are subject to sudden attacks of spasm about the wind-pipe, producing a temporary feeling of suffocation, with a crowing sound; but there is no hoarse cough. It is apt to take place suddenly at night, when crying. This may be relieved by anti-spasmodics, and laxatives.

OF THE RICKETS.

This disease generally attacks children between the age of nine months and two years. It affects the bones. The head is sometimes enlarged to an enormous size; the wrists and ancles seem protuberant, and as the bones increase in size, the child grows weaker.

One cause of the rickets is diseased parents. Mothers of a weak relaxed habit, who neglect exercise, and live upon weak watery diet, can neither be expected to bring forth strong healthy children, or be able to nurse them when they are brought forth. Accordingly, we find that the children of such women generally die of the rickets, scrofula, hip-gout, or such like diseases. Children begotten by men in the decline of life, who are subject to the gout, gravel, or other chronic diseases, or who have been afflicted with the venereal disease in their youth, are likewise very liable to the rickets.

This disease, however, is chiefly owing to the sloth or negligence of the nurse. Allowing an infant to lie or sit too much, or not keeping it thoroughly clean in its clothes, has the most pernicious effects. Those children who are much dandled and danced, kept clean, and frequently in motion, carried sometimes on one, and sometimes on the other arm, will be forever strangers to this disorder. A healthy child should always be kept in motion, unless when asleep.

At the beginning of this disease, the child's flesh grows soft and

flabby; its strength is diminished; it loses its wonted cheerfulness, looks more grave and composed than is natural for its age and does not choose to be moved. The head and belly become too large in proportion to the other parts; the face appears full, and the complexion florid. Afterwards the bones begin to be affected, especially in the more soft and spongy parts. Hence the wrists and ancles become thicker than usual; the spine or back-bone puts on an unnatural shape; the breast is likewise deformed, and the bones of the arms and legs grow crooked. All these symptoms vary according to the violence of the disease. The pulse is generally quick, the appetite and digestion for the most part bad; the teeth come slowly, and with difficulty, and they often rot and fall out afterwards. Ricketty children generally have great acuteness of mind, and an understanding above their years.

For the cure, give chalybeates, tonics, change of air, plenty of exercise, which is absolutely necessary, and let the child be plunged into cold water every morning; but never give it a second, much less a third dip. The whole object of the regimen and treatment should be to strengthen and brace the solids, and promote the digestion and due preparation of the fluids; and the cure is more in the hands of the nurse than the physician.

If the humors are vitiated, cleansing medicines are necessary. The diet should be dry and nourishing, consisting principally of flesh. His drinks may be stimulating and cordial, as claret wine, or good ale or porter. Strengthening bitters must be persevered in for a long time, as colombo, gentian, iron, myrrh, horse-radish, buckhorn brake, and such like. A few drops of elixir vitriol will have a good effect, given occasionally.

The limbs should be rubbed frequently with a warm hand, and the child kept as cheerful as possible. A bed of buckhorn brake to lay the child on, helps greatly in the cure.

CONVULSIONS.

If symptomatic, the removal of the primary disorder which occasions them is the first object. Those that are most common generally yield to the sal æratus and rhubarb mixture, strongly tinctured with peppermint, taken three or four times a day as long as there is occasion. Or, anti-spasmodics, as musk, castor, valerian, the fever powders, &c. may be administered.

When a child is seized with convulsions without having any complaint in the bowels, or symptoms of teething, or any rash or other discharge which has been suddenly dried up, we have reason to conclude that it is a primary disease, and proceeds immediately from the brain. Cases of this kind happen but seldom, which is very fortunate, as little can be done to relieve the unhappy patient. When a disease proceeds from an original fault in the formation of the brain itself, we cannot expect that it should yield to medicine. But as this is not always the case, even of convulsions which proceed immediately from the brain, we should attempt to remove them. The chief intention to be pursued for this purpose, is to make some derivation from the head, by blistering, purging, and the like; and by

bathing the head with cooling anodyne washes. At the same time the body should be rubbed over the whole surface with a warm hand, to produce a proper degree of circulation.

DROPSY IN THE HEAD.

Though water in the head, or dropsy in the brain, may affect adults as well as children, yet, as the latter are more peculiarly liable to it, we thought it would be most proper to place it among the diseases of infants. In dissecting such as die of this disorder, there is generally found below the hard body, a bag of water, generally as large as a goose egg, or two or three ounces of water extravasated on each side of the scythe process.

A dropsy of the brain may proceed from injuries of the brain itself; it may likewise proceed from an original laxity or weakness of the brain; from schirrous tumors, or excrescences within the skull; a thin watery state of the blood; a diminished secretion of urine; a sudden check of perspiration; and lastly, from tedious and lingering diseases, which waste and consume the patient.

This disease has at first the appearance of a slow fever; the patient complains of a pain in the crown of his head, or over his eyes; he shuns the light, is sick, and sometimes vomits; his pulse is irregular and generally low; though he seems heavy and dull, yet he does not sleep; he is sometimes delirious, and frequently sees objects double; towards the end of this commonly fatal disease, the pulse becomes more frequent, the pupils are generally dilated, the cheeks flushed, the patient becomes sleepy, and convulsions ensue.

No medicine has hitherto been found sufficient to carry off a dropsy of the brain, after it is seated. One reason why this disease is seldom or never cured is, that it is seldom known till it is too far advanced to admit of a remedy. It is laudable, however, to make some attempts, as time or chance may bring many things to light, of which at present we have no idea. The appropriate remedies are the same as in other species of dropsy, together with sneezing snuffs.

A singular circumstance attending many infants for some time after birth, is, a constant hankering for something, sucking its fists or any thing it gets hold of, attended with continual uneasiness, crying, wasting of the flesh, and other bad symptoms. None of the common remedies will give relief in these cases. When I find a child in this condition, I conclude it wants or longs for something, and that this longing is caused, or governed, by a longing of the mother previous to the birth, which was unsatisfied. I therefore request the mother to recollect what article of food, fruit, or drink, she was fond of, or particularly craved during pregnancy, in which she was not gratified; and if she can bring any such thing to mind, to give it to the child. She can generally do so, on reflection, and upon giving it to the child till he is satisfied, he becomes at once quiet and contented, and resumes his growth and thriving appearance. It is astonishing to see with what voracity and eagerness the little creature will devour the article he craved, when he has once

obtained it. I have seen a child four weeks old eat a large apple scraped fine, and another suck down a teacup full of short-cake, in milk, while another eat a gill of cherries; and in no case have I known injury to result from gratifying its appetite to the full; while on the contrary, it has never failed within my knowledge of giving entire relief.

I presume this mode of accounting for, and curing this affection in children, will be considered as silly or ridiculous, by many practitioners: I thought so once myself; but actual demonstration in numerous instances, has satisfied me of the truth of what is above stated. Of those who doubt it, I only ask, that they make the experiment the first fitting opportunity that presents, and by so doing, they will have the satisfaction of saving the child's life.

To look over the long catalogue of infantile diseases in some medical books, one would be inclined to think that the real design of the authors, though concealed under the show of precision, was to spread alarm through every family. I have had a very different object in view, viz. to quiet the fears of parents, to direct their attention to the proper treatment of children, and thus to render the use of any medicines almost unnecessary. I have shown the folly of having recourse to physic to bring away the black, viscid, syrup-like substance contained in the intestines of a new-born infant, when the purgative quality of its mother's milk is so admirably suited to that very purpose. In Germany, and the north of Europe, the infant is allowed nothing but the breast, even if no milk appears for two or three days, and no bad consequences ever result from it. The new milk is thin and watery, but acquires every day greater consistence, and thus affords a more solid aliment to the child as he becomes capable of digesting it. If the mother does not vitiate by her own improper diet, the pure fountains of nourishment and health which Nature has kindly given her, the child will neither be troubled with costiveness or gripes. He will escape those complaints of the stomach which are occasioned by swallowing crude, inflammatory trash, or still more pernicious drugs. The daily use of the cold bath, and frequent exercise in the open air, will not only preserve him from colds and defluxions, but from all the disorders which are the consequences of relaxation and nervous irritability. A child brought up in the way I have recommended, will have little to fear even from external contagion. The firm texture of his skin, like a shield, will almost resist its approach, and the purity of his habit will correct its malignity.

OBSERVATIONS ON THE MORAL AND PHYSICAL MANAGEMENT OF CHILDREN, DISEASES &c.

It is during infancy that the foundation of a good or bad constitution is generally laid; it is therefore of importance that parents should be well acquainted with the various causes that may injure the health of their offspring.

It appears from the registers of the dead of the principal cities of

the United States, that more than one half of the children born in those cities, die under the age of twelve years. To many, indeed, this may appear a natural evil; but on due examination it will be found to be one of our own creating. Were the death of infants a natural evil, other animals would be as liable to die young as man; but we find this is by no means the case.

It may seem strange that man, notwithstanding his superior reason, should fall so far short of other animals in the management of his young; but our surprise will soon cease, if we consider that brutes, guided by instinct, never err in this respect; while man trusting solely to art, is seldom right. Were a catalogue of those infants who perish annually by art alone exhibited to public view, it would astonish most people.

If parents are above taking care of their children, others must be employed for that purpose. These will always endeavor to recommend themselves by the appearance of extraordinary skill and address. By this means, such a number of unnecessary and destructive articles have been introduced into the diet, clothing, &c., of infants, that it is no wonder so many of them perish. Were the brutes to bring up their young by proxy, they would share the same fate with those of the human species.

We mean not, however, to impose it as a task upon every mother to suckle her own child; this would be impracticable as well as improper in some cases of debility, disease, or nervous weakness, and might prove destructive both to the mother and child. Almost every mother would be in a condition to give suck, did mankind live agreeably to Nature; but whoever considers how far many mothers deviate from her dictates, will not be surprised to find some of them unable to perform that necessary office. Mothers who do not eat a sufficient quantity of solid food, nor enjoy the benefit of air and exercise, can neither have wholesome juices themselves, nor afford proper nourishment to an infant. Hence, children who are suckled by delicate women either die young, or continue weak and sickly all their lives.

When we say that mothers are not always in a condition to suckle their own children, we would not be understood as discouraging that practice. Every mother who can, ought certainly to perform so agreeable and tender an office. But suppose it to be out of her power, she may, nevertheless, be of great service to her child. The business of nursing is by no means confined to giving suck: that is the easiest part of it. Nevertheless, other offices are necessary for a child, which the mother ought at least to see done.

A mother who abandons the fruit of her womb as soon as it is born to the sole care of an hireling, hardly deserves that name. A child, brought up under the mother's eye, not only secures her affection, but may reap all the advantages of a parent's care, though suckled by another. How can a mother be better employed than in superintending the welfare of her own offspring? This is at once the most delightful and important office; yet the most trivial business or insipid amusements are often preferred to it! To the praise of American women, however be it spoken, they have not yet rivalled their

sex in the old world, in this species of degeneracy, and want of natural feeling.

Did mothers reflect on their own importance, and lay it to heart, they would embrace every opportunity of informing themselves of the duties which they owe to their infant offspring. It is their province, not only to form the body, but also to give the mind its most early bias. They have it very much in their power to make men healthy or valetudinary; useful in life, or the pests of society. It is indeed to be regretted that more care is not bestowed in teaching the proper management of children to those whom Nature has designed for mothers. This, instead of being made the principal, is seldom considered as any part of female education. Is it any wonder, when females so educated come to be mothers, that they should be quite ignorant of the duties belonging to that character? However strange it may appear, it is certainly true, that many mothers are as ignorant, when they have brought a child into the world, of what is to be done for it, as the infant itself. But while the education of females implies little more than what relates to dress and public show, we have nothing to expect from them but ignorance, even in the most important concerns.

OF DISEASED PARENTS.

ONE great source of the diseases of children is the UNHEALTHINESS of PARENTS. It would be as reasonable to expect a rich crop from a barren soil, as that strong and healthy children should be born of parents whose constitutions have been worn out with intemperance or disease.

An ingenious writer observes, that on the constitution of the mother depends originally that of their offspring. No one who believes this will be surprised, on a view of the female world, to find diseases and death so frequent among children. A delicate female, brought up within doors, an utter stranger to exercise and open air, who lives on tea and other slops, may bring a child into the world, but it will hardly be fit to live. The first blast of disease will nip the tender plant in the bud; or should it struggle through a few year's existence, its feeble frame, shaken with convulsions from every trivial cause, will be unable to perform the common functions of life, and prove a burden to society.

If to the delicacy of mothers we add the irregular lives of fathers, we shall see farther cause to believe that children are often hurt by the constitution of their parents. A sickly frame may be originally generated by hardships, or intemperance, but chiefly by the latter. It is impossible that a course of vice shall not spoil the best constitution; and did the evil terminate here, it would be a just punishment for the folly of the sufferer: but when once a disease is contracted and rivetted in the habit, it is often entailed on posterity. What a dreadful inheritance is the gout, the scurvy, the king's-evil, or the venereal, to transmit to our offspring! A person laboring under any malady, particularly of bad blood, ought not to marry till that is properly cleansed, and the disease eradicated. Want of attention to these

things in forming connections for life, has rooted out more families than the sword.

Such children as have the misfortune to be born of diseased parents will require to be nursed with greater care than others. They should also go through a course of mild, cleansing, vegetable remedies, and by a proper perseverance, we may in this way make amends for the defects of constitution.

Clothing of Children.

The clothing of an infant is so simple a matter, that it is surprising how any person should err in it; yet many children lose their lives, and others are deformed, by inattention to this article.

Nature knows of no use of clothes to the infant but to keep it warm. All that is necessary for this purpose, is to wrap it in a soft loose covering. Were a mother left to the dictates of Nature alone, she would certainly pursue this course. But the business of dressing an infant is in a great measure out of the hands of mothers, and has principally become a secret which none but nurses pretend to understand.

From the most early ages it has been thought necessary that a woman in labor should have some one to attend her. This in time became a business; and, as in all others, those who were employed in it strove to out-do one another in the different branches of their profession. The dressing of a child became of course to be considered as the midwife's province; who no doubt imagined, that the more dexterity she could show in this article, the more her skill should be admired. Her attempts were seconded by the vanity of parents, who, too often desirous of making a show of the infant as soon as it was born, were ambitious to have as much finery heaped upon it as possible. Thus it came to be thought as necessary for a midwife to excel in bracing and dressing an infant, as for a surgeon to be expert in applying bandages to a broken limb; and the poor child as soon as it came into the world, had as many rollers and wrappers applied to its body as if every bone had been fractured in the birth; while these were often so tight, as not only to gall and wound its tender frame, but even to obstruct the motion of the heart, lungs, and other organs necessary to life.

In some countries the practice of rolling children in so many bandages, is in a measure laid aside; but it would still be a difficult task to persuade the generality of mankind that the shape of an infant does not entirely depend on the care of the midwife. So far, however, are all her endeavors to mend the shape from being successful, that they constantly operate the contrary way, and mankind become deformed in proportion to the means used to prevent it. How little deformity of body is to be found among uncivilized nations! So little, indeed, that it is vulgarly believed they put all their deformed children to death. The truth is, they hardly know such a thing as a deformed child. Neither should we, if we followed their example. Savage nations never think of managing their children. They allow them the full use of every organ, carry them abroad in the open air, wash their bodies daily in cold water, &c. By this management

their children become so strong and hardy, that by the time our puny infants get out of the nurse's arms, their's are able to shift for themselves.

Among brute animals, no art is necessary to procure a fine shape. Though many of them are extremely delicate when they come into the world, yet we never find them grow crooked for want of swaddling bands. Is Nature less generous to the human kind? No: but we take the business out of Nature's hands.

Not only the analogy of other animals, but the very feelings of infants tell us, they ought to be kept easy and free from pressure. They cannot, indeed, tell their complaints, but they can show signs of pain; and this they never fail to do by crying when hurt by their clothes. No sooner are they freed from their bracings than they feel pleased and happy; yet, strange infatuation! the moment they hold their peace, they are again committed to their chains.

If we consider the body of an infant, as a bundle of soft pipes, replenished with fluids in continual motion, the danger of pressure will appear in the strongest light. Nature, in order to make way for the growth of the children, has formed their bodies soft and flexible, and lest they should receive any injury from pressure in the womb, has surrounded the *fœtus* every where with fluids. This shows the care which Nature takes to prevent all unequal pressure on the body of infants, and to defend them against every thing that might in the least cramp or confine their motions.

It would answer little purpose to specify the particular species of dress for an infant. These will vary in different countries, according to the custom and humor of the parents. The great rule to be observed is: *That a child have no more cloths than are necessary to keep it warm, and that they be quite easy for its body.*

Stays are the very bane of infants. A volume would not be suffice to point out all the bad effects of this ridiculous piece of dress, both on children and adults. The madness in favor of stays seems no wise abated, notwithstanding the fearful quota it furnishes to the swollen list of consumptions; but it is hoped the world will, in time, become wise enough to know, that the human shape does not solely depend upon whalebone, steel, or bend leather.

I shall only add with respect to the clothes of children, that they ought to be kept thoroughly clean. Children perspire more than adults, and if their clothes be not frequently changed, they become very hurtful. Dirty clothes not only gall and fret the tender skins of infants, but likewise occasion ill smells, and what is worse, tend to produce vermin and cutaneous diseases.

Of the Food of Children.

Nature not only points out the proper food for an infant, but actually prepares it. The mother's milk, or that of a healthy nurse, is unquestionably the best food for an infant. Neither art nor nature can afford a proper substitute for it.

A child, soon after the birth, shows an inclination to suck; and there is no reason why it should not be gratified. It is true the ma-

ther's milk does not always come immediately after birth: but this is the way to bring it; besides, the first milk that the child can squeeze out of the breast answers the purpose of cleansing better than all the drugs in the apothecary's shop, and at the same time prevents inflammations of the breast, fevers, and other diseases incident to mothers.

It is strange how people came to think that the first thing given to a child should be drugs. This is beginning with medicine betimes, and no wonder if they generally end with it. It sometimes happens, indeed, that a child does not discharge the *meconium* so soon as could be wished; this has induced physicians, in such cases, to give something of an opening nature to cleanse the first passages. Midwives have improved upon this hint, and never fail to give syrups, oils, &c. whether they be necessary or not. Cramming an infant with such indigestible stuff as soon as it is born, can hardly fail to make it sick, and is more likely to occasion diseases than to prevent them. Children are seldom long after the birth without having a passage both by stool and urine; though these evacuations may be wanting for some time without any danger. But if children must have something before they be allowed the breast, let it be a little thin water-pap, to which may be added an equal quantity of new milk, or even water alone. Wines, cordials, spiceries, &c. can have no beneficial effect.

If the mother or nurse has enough of milk, the child will need little or no other food for the third or fourth month. It will then be proper to give it, once or twice a day, a little of some food that is easy of digestion, as water-pap, milk porridge, weak broth with bread in it, and such like. This will ease the mother, will accustom the child by degrees to take food, and will render the weaning both less difficult and less dangerous. All great and sudden transitions are to be avoided in nursing. For this purpose the food of children ought not only to be simple, but to resemble as nearly as possible the properties of milk. Indeed, milk itself, or with Indian pudding, or mush, should make a principal part of their food, not only before they are weaned, but for some time after.

Next to milk, we would recommend good light bread. Bread may be given to a child as soon it shows any inclination to chew. The very chewing of bread will promote the cutting of the teeth, and the discharge of saliva, while, by mixing with the nurse's milk in the stomach, it will afford an excellent nourishment. Children discover an early inclination to chew whatever is put into their hands. Parents observe this inclination, but generally mistake the object. Instead of giving the child something which may at once exercise its gums and afford it nourishment, they commonly put into its hands a stick a piece of metal, or other hard substance. A crust of bread is the best gum stick. It not only answers the purpose better than any thing else, but has the additional property of nourishing the child, and carrying the saliva down into the stomach, which is too valuable a liquor to be lost.

For a child farther advanced, bread may be mixed in veal or chicken broth, made into puddings, or the like. Bread is a proper food for children at all times, provided it be plain, made of wholesome

grain, and well fermented; but when enriched with fruits, sugar, or such things, it becomes very unwholesome. It is soon enough to allow children animal food when they have got teeth to eat it.

Few things prove more hurtful to infants than the common method of sweetening their food. It entices them to take more than they ought to do, which makes them grow fat and bloated. It is pretty certain, if the food of children were quite plain, that they would never take more than enough. Their excesses are entirely owing to nurses. If a child be gorged with food at all hours, and enticed to take it, by making it sweet and agreeable to the palate, is it any wonder that such a child should in time be induced to crave more food than it ought to have?

After a child is weaned, it ought to be fed four or five times a day, but should never be accustomed to eat in the night; neither should it have too much at a time.

Few things are more hurtful to children than unripe fruits. They weaken the powers of digestion, and sour and relax the stomach, by which means it becomes a proper nest for vermin. When children live entirely upon slops, it relaxes their solids, renders them weak, and disposes them to the rickets, scrofula, and other glandular disorders. Relaxation is the most general cause of the diseases of children. Every thing, therefore, particularly warm teas, which tend to unbrace the solids, ought to be carefully avoided.

Exercise of Children.

Of all the causes which conspire to render the life of man short and miserable, none has greater influence than the want of proper EXERCISE: healthy parents, wholesome food, and proper clothing, will avail little, when exercise is neglected. Sufficient exercise will make up for several defects in nursing; but nothing can supply the want of it. It is absolutely necessary for the health, the growth, and the strength of children.

The desire of exercise is coeval with life itself. Were this principle attended to, many diseases might be prevented. But while indolence and sedentary employments prevent two-thirds of mankind from either taking sufficient exercise themselves, or giving it to their children, what have we to expect but diseases and deformity among their offspring! The rickets, so destructive to children in cities, never appeared till manufactories began to flourish, and people, attracted by the love of gain, left the country to follow sedentary employments in large towns. It is amongst such that this disease chiefly prevails.

The conduct of other young animals shows the propriety of giving exercise to children. Every other animal makes use of its organs of motion as soon as it can; and many of them, even when under no necessity of moving in quest of food, cannot be restrained without force. This is evidently the case with the calf, the lamb, and most other young animals. If these creatures were not permitted to frisk about and take exercise, they would soon die or become diseased. The same inclination appears very early in the human species; but as they are not able to take exercise themselves, it is the business of

their parents and nurses to assist them. This may be done in various ways. The best method, while they are light, is to carry them about, and dance and dandle them in the nurse's arms, and frequently changing their position. When children begin to walk, the safest and best method of leading them about is by the hand.

It is a common notion that if children are set upon their feet soon, their legs will become crooked. There is reason to believe that the very reverse of this is true. Every member acquires strength in proportion as it is exercised. The limbs of children are weak indeed, but their bodies are proportionably light; and had they skill to direct themselves, they would soon be able to support their own weight. Who ever heard of any other animal that became crooked by using its legs too soon?

A good constitution ought certainly to be our first object in the management of children. It lays a foundation for their being useful and happy in life; and whoever neglects it, not only fails in his duty to his offspring, but to society. It would be of great service to boys, if at a proper age, they were taught military or gymnastic exercises. This would increase their strength, inspire them with courage and independence, and render them more fit for the active duties of life. An effeminate education will infallibly spoil the best natural constitution; and if boys are brought up in a more delicate manner, than even girls ought to be, they will never be men.

There are, besides, various ways of employing young people without hurting their health. The easier parts of gardening, husbandry, or any business carried on without doors, are most proper. These are employments which most young people are fond of, and some parts of them may be always adapted to their age, taste, and strength.

Nor is the common education of girls less hurtful to the consttiution than that of boys. Miss is set down to her frame before she can put on her own clothes, and is taught to believe that to excel at the needle, is the only thing that can entitle her to general esteem. It is unnecessary here to insist on the dangerous consequences of obliging girls to sit too much. They are pretty well known, and are too often felt at a certain time of life. But supposing the critical period to be got over, greater dangers still await them when they come to be mothers. Women who have been accustomed to a sedentary life, generally run great hazard in child-bed; while those who have been used to romp about, and take sufficient exercise, are seldom in any danger.

One hardly meets with a girl who can at the same time boast of early performances with the needle, and a good constitution. Close and early confinement generally occasions indigestions, headachs, pale complexions, pain in the stomach, loss of appetite, coughs, consumptions of the lungs, and deformity of the body. Would mothers instead of having their daughters instructed in many trifling accomplishments, employ them in plain work and housewifery, and allow them sufficient exercise in the open air, they would both make them more healthy mothers, and more useful members of society.

Some imagine that exercise within doors is sufficient; but they are generally mistaken. One hour spent in running, or any other

exercise without doors, is worth ten within. When children cannot go abroad, they may be exercised at home. The best method of doing this is to make them run about in a large room, or dance. This last kind of exercise, if not carried to excess, is of excellent service to people. It cheers the spirits, promotes perspiration, and strengthens the limbs, &c. I knew an eminent physician who used to say, that he made his children dance instead of giving them physic. It were well if more people followed his example.

POISONS.

Every person ought, in some measure, to be acquainted with the nature and treatment of poisons. They are not unfrequently taken unawares, and their effects are often so sudden and violent as not to admit of delay, or allow time to procure the assistance of medical men.

There are four kinds of poisons; viz: mineral, vegetable, ærial, and animal.

Mineral poisons are distinguished from vegetable ones by their action. The former corrode, stimulate, and inflame; the latter generally stupify, without leaving any marks of inflammation.

None of the mineral poisons prove fatal, till after a most excruciating operation of at least two or three hours; whereas some of the vegetable ones terminate life in a few minutes. From the animal poisons the distinction is as remarkable. The ærial poisons operate still more quickly than any other classes, and their action on respiration is of so peculiar and immediate an influence, that it can seldom be mistaken.

Poison seldom remains long in the stomach before it occasions sickness, with an inclination to vomit. This shows plainly what ought to be done. Indeed, common sense dictates to every one, that if any thing has been taken into the stomach which endangers life, it ought immediately to be discharged. Were this duly regarded, the danger arising from poisons might often be avoided.

MINERAL POISONS.

The chief of the mineral poisons are, arsenic, and its preparations, corrosive sublimate, lead, copper, antimony, &c.

Symptoms.—When a metallic poison has been swallowed, the symptoms are an austere taste, fœtid breath, constriction of the funnel and gullet; hiccup, nausea, and vomiting of brown or bloody matter, anxiety, and faintings, heat with violent pain at the pit of the stomach; black and offensive stools, small pulse, frequent and irregular palpitations, great thirst and burning heat, breathing difficult,

urine scanty, red, and bloody, delirium, convulsions of an epileptic type, and death.

TREATMENT.—Vomiting is to be immediately excited; blood-root tincture is perhaps as quick and safe as any vomit, this must be followed up by large and long continued draughts of camomile, linseed tea, or other emollient fluids. If arsenic has been taken in solution, lime-water, chalk and water, or pearlash water, may be drank freely. Inflammatory symptoms are to be combatted as in other cases of inflammation in the stomach; with fomentations, frequent emollient clysters, as symptoms may require.

For arsenic no specific antidote is yet known. Vinegar, charcoal powder, and emollient and mucilaginous vegetable decoctions, as of barley with gum arabic, mutton and veal broths, linseed tea, milk, and such like, will tend to absorb the poison, sheath the parts, and prevent their being acted upon by the particles of the poisonous matter. With the same intentions, either of the above preparations may be thrown up in the form of a clyster.

TESTS.—To ascertain when arsenic is present in any fluid, the most certain test is to reduce it to its metallic state, by calcining the dried suspected matter in a glass tube, with equal parts of charcoal and potash; when, if arsenic is present, in however minute a quantity, it will be sublimed and stick to the inside of the tube, in the form of a shining metallic coating, consisting of cubic crystals.

Another test is: make with the suspected fluid a broad streak on writing paper, then draw a piece of lunar caustic several times over the moistened part, which will become yellow if arsenic or alkaline phosphate be present. If it be arsenic, the streak will be rough, curdy and flocculent; if a phosphate, smooth and uniform. In a few minutes phosphoric yellow fades into a dull green, becomes darker and ultimately black. The arsenical yellow remains permanent, or nearly so for some time, when it becomes brown. These distinctions are to be made by reflected, not transmitted light, the test being made in the shade.

Another simple and efficacious means of detecting arsenic is, by infusing a portion of the suspected matter in a solution of vegetable alkali, or potash; after standing an hour or two, pour upon it a solution of sulphate of copper. If any arsenic is present, the copper will be immediately converted into a beautiful green, and will soon be precipitated. In this way, water, or the contents of the stomach, supposed to contain arsenic, may be examined.

If a few grains of matter, supposed to contain arsenic, be thrown on a hot iron, a smell like garlic will be perceived. If a few grains of the same be placed between two plates of copper, (as two cents) and subjected to a red heat, the copper becomes whitened.

MERCURY, AND ITS PREPARATIONS: *Corrosive Sublimate, Red Precipitate, Vermilion, Calomel, &c.*

SYMPTOMS.—Acrid metallic taste, thirst, fulness and burning at the throat, anxiety, teasing pains of the stomach and bowels, nausea

and vomiting of various colored fluid, sometimes bloody; diarrhœa, and difficulty of making water. Pulse quick, small, and hard; faintings, great debility, difficult breathing, cramps, cold sweats, insensibility and death.

TREATMENT.—Whites of eggs decompose corrosive sublimate. One mixed with water may be given every two or three minutes to promote vomiting, and to lessen the virulence of the poison: milk in large quantities, gum Arabic solution, linseed tea, sugar and water, or water itself, at about 80°. Gluten, as it exists in wheat flour, also decomposes sublimate, and should be given mixed with water. Inflammation must be counteracted.

TESTS.—Mercurial preparations, heated to redness in a glass tube with potash, are decomposed, the quicksilver being volatilized. The sublimate is precipitate white by ammonia; yellow, by potash; and of an orange color, by lime water.

The red and nitric oxides of mercury may be dissolved in muriatic acid, and converted into sublimate.

Vermilion is insoluble in water or muriatic acid; but is entirely volatilized by heat.

ANTIMONY, AND ITS PREPARATIONS. *Emetic Tartar, &c.*

When an excess of emetic tartar, or any other preparations of antimony, have been taken, the particular symptoms are those occasioned by acids, with copious and obstinate vomitings, abundant stools, constrictions of the throat, cramps, symptoms of intoxication, and prostration of strength.

TREATMENT.—Emetic tartar generally defeats itself by the vomiting it soon occasions after it is taken; but when this does not take place, it should be excited by tickling the throat with a feather or the finger; and encouraged by copious draughts of mild fluids; or when too severe, to be allayed by opium, according to the effects previously produced by the poison.

The best antidotes are, a decoction of astringent vegetables, such as oak or willow bark, strong green tea, sweet bugle, &c. which should be given freely for the purpose of diluting and decomposing the poison.

TESTS.—Sulphurated hydrogen precipitates tartarized antimony from its solution of an orange or deep brownish red color; white, by sulphuric acid, alkalies, or lime water. Infusion of gall occasions a copious whitish yellow precipitate. The muriate of antimony is a dark heavy fluid, to which, if water be added, a white precipitate is formed.

All the preparations of antimony are readily reduced to the metallic state by calcination with charcoal and potash.

COPPER AND ITS PREPARATIONS. *Blue Vitriol, Verdigris. Food cooked in foul Copper Vessels, and Pickles made green by Copper.*

SYMPTOMS.—Acrid and coppery taste; tongue parched and dry; constriction of the throat and coppery eructations; severe vomitings, or fruitless efforts to vomit; dragging at the Stomach, dreadful colic, frequent, black, bloody stools with tenesmus; abdomen distended; pulse small, hard, and quick; fainting, great thirst and anxiety, cold sweats, scanty urine, pain in the head, swimming, cramps, convulsions, and death.

TREATMENT.—Large draughts of milk and water to encourage vomiting.—Whites of eggs, stirred up with water, and taken freely. Sugar may be given advantageously with coffee. Nervous symptoms require anti-spasmodics.

TESTS.—The salts of copper are mostly of a bright green or blue colour, and are easily reduced to their metallic state by means of charcoal at an elevated temperature. Blue vitriol is partly decomposed by alkalies and alkaline earths. Potash precipitates a subsulphate of a green color from it.

If the salts of copper be dissolved in coffee, port wine, or malt liquors, which partly decompose them, they may be detected by adding a spiritous tincture of guaiacum, which will throw down a precipitate varying in shade from a greenish indigo to that of a pale green.

LEAD AND ITS PREPARATIONS; or fluids adulterated with lead.

SYMPTOMS.—When lead has been taken in large quantity, a sugary astringent metallic taste is felt in the mouth; constriction of the throat; pain in the region of the stomach; obstinate, painful, and often bloody vomiting, hiccup, convulsions and death.

When taken in small long-continued doses, it produces the "painter's colic," and paralytic symptoms.

TREATMENT.—The sulphates of soda and magnesia are antidotes to the salts of lead, and barytes. These may be assisted with fat, and castor oil, together with frequent emollient clysters, to clear out the bowels.

TESTS.—The preparations of lead are easily reduced to their metallic state by calcination with charcoal. The sugar of lead dissolved in water is precipitated white, by means of sulphuric acid.

NITRATE OF SILVER. *(Lunar Caustic.)*

SYMPTOMS similar to those of other corrosive poisons.

TREATMENT.—A table spoonful of the muriate of soda (common

salt) dissolved in a pint of water, and a wine glass full to be taken every two minutes, to decompose the poison; after which, mucilaginous drachms or purgatives may be administered.

TEST.—Nitrate of silver is precipitated white by common salt. If placed on burning coals it animates them, leaving a coating of silver. Calcined with charcoal and potash, the silver is reduced to its metallic state.

SULPHATE OF ZINC. *(White Vitriol.)*

SYMPTOMS.—A sour taste, sense of choking, nausea, vomiting, pain in the stomach, frequent stools, quickened pulse, face pale, cold extremities, but seldom death from the emetic qualities of the poison.

TREATMENT.—Vomiting is rendered easy by copious draughts of warm water, and particular symptoms to be opposed by appropriate remedies.

TESTS.—Pure sulphate of zinc is precipitated white by potash and ammonia. The oxide is reduced by calcination with charcoal and nitre.

ACIDS: *Sulphuric Acid, or Oil of Vitriol; Nitric Acid, or Aqua Fortis; Muriatic Acid, or Spirit of Salt; Oxalic Acid, or Acid of Sugar; Phosphoric, Tartaric, Prussic.*

GENERAL SYMPTOMS.—Acid burning taste in the mouth, acute pain in the throat, stomach and bowels, frequent vomiting of bloody fluid which effervesces with chalk, or alkaline carbonates, and reddens paper; hiccup, copious stools more or less bloody; tenderness of the abdomen, excessive thirst, drink increasing the pain, and seldom staying down; frequent but vain efforts to make water; cold sweats, altered countenance, convulsions, death.

TREATMENT.—Mix an ounce of magnesia with a quart of warm water, and give a wine-glassful every two minutes. Soap-suds, or chalk and water may be used till the magnesia is procured. Vomiing may be excited by tickling the throat. Diluents to be taken after the poison is neutralized or ejected.

If sulphuric acid has been swallowed, water alone should not be given, nor should calcined magnesia with water be given; but the common carbonate of magnesia with water may be given freely. If these precautions be not observed, there is too much heat generated in the stomach.

If acid of sugar has been taken, chalk and water is preferable to magnesia.

If prussic acid has been taken, emetics are to be administered with as little delay as possible, and after their operation, oil of turpentine, brandy, and other stimulants capable of rousing the system, should be perseveringly employed, with warm friction and blisters.

Generally, alkalies are the proper antidotes to acids, and *vice versa*.

TESTS.—Sulphuric acid is known by its great weight, by its evolving heat when mixed with water; by emitting no fumes.

Nitric acid emits orange colored fumes upon adding copper to it, by which it is changed to blue. It tinges the skin yellow.

Muriatic acid emits pungent fumes. If nitrate of silver be added to it, a very white precipitate is formed of muriate of silver, soluble in ammonia but not in nitric acid.

Oxalic acid precipitates lime and all its salts from water. Exposed to heat it volatilizes, leaving but a little residue. Muriatic acid dissolves and decomposes it with heat.

Phosphoric acid precipitates barytes and lime-water. It is decomposed by charcoal at a high temperature, evolving carbonic acid, and phosphorus being sublimed.

Tartaric acid produces a precipitate from lime-water. With potash it forms a neutral salt.

Prussic acid has a strong odor of bitter almonds, and is contained in that fruit, and in the leaves of the peach and laurel; it is soluble in alcohol, but hardly in water, and is precipitated in its solution by nitrate of silver.

ALKALIES. (*Potash, Soda, Ammonia.*)

SYMPTOMS.—The symptoms of having swallowed an alkali in excess are, an acid, urinous and acrid taste in the mouth; great heat in the throat, nausea and vomiting of bloody matter, which changes syrup of violets to green, and effervesces with acids if the carbonated form of the acid has been taken; copious stools, acute pain in the stomach, colic, convulsions, and death.

TREATMENT.—Give vinegar and other vegetable acids largely, to neutralize the alkali; and treat the concomitant symptoms upon general principles.

TESTS.—Alkalies have many properties in common; their solutions feel soapy; they change vegetable blues to green, and yellow to brown; remain transparent when carbonic acid is added to them, which serves to distinguish them from alkaline earths, barytes, strontium, and lime.

Potash and soda may soon be distinguished from each other by evaporating their solution to dryness; potash will become moist by absorbing water from the atmosphere, while soda will remain dry. Ammonia is known by its pungent smell.

ALKALINE EARTHS. (*Lime, Barytes.*)

SYMPTOMS.—Violent vomitings, convulsions, palsy of the limbs, distressing pains in the abdomen, hiccup, alteration of countenance, and very early death.

TREATMENT.—If lime has been taken, vinegar and other vegetable acids are the best antidotes.

If barytes in any of its forms has been swallowed, a weak solution

of Epsom or Glauber's salts should be copiously drank to produce vomiting; and, at the same time, to decompose the poison, which it renders inert, by forming an insoluble sulphate. Till either of the above salts can be obtained, large draughts of water alone, or made slightly sour by elixir vitriol, may be freely drank.

TESTS.—Solution of lime changes vegetable blues to green, and is precipitated white by carbonic acid. Its salts are decomposed by the fixed alkalies, which precipitate the lime, but not the ammonia.

Pure barytes undergoes similar changes to lime when water is added to it, and acts like it on the vegetable colors. It does not effervesce with acids.

NITRE,—*(Salt-petre, Nitras Potassæ).*

SYMPTOMS.—Pain in the stomach, nausea, painful vomiting, purging, convulsions, syncope, with feeble pulse, cold extremities, teasing pains of the stomach and bowels; a species of intoxication, and often death.

TREATMENT.—Similar to that of arsenic, only that lime is not to be used.

VEGETABLE POISONS.

SOME species of fungi, or mushrooms, hemlock, nightshade, foxglove, stramonium, and other plants of the narcotic tribe, by being taken through mistake, often prove a source of poison.

The symptoms occasioned by all poisonous substances of the vegetable class are, giddiness, confusion of sight, wildness of the eyes, palpitations, loss of memory and voice, stupor, nausea, vomiting, great distention of the stomach, universal twitchings and convulsions.

Under accidents of this nature we must attempt the immediate evacuation of the offending matter; but it is only quickly after the narcotic has been taken, and before it has excited its peculiar symptoms, that an emetic can be advantageously given. The most proper emetics would be blood-root, or lobelia, which will throw out the poison that may remain in the stomach. Dilute plentifully with camomile tea.

Afterwards, to counteract the effects of the poison, the patient should be made to drink copiously, if possible, of vinegar, or other strongly acidulated liquors, and particularly the juice of lemons. For the purpose of rousing the system from a state of torpor, particularly when immoderate quantities of opium have been taken, the patient is to be kept in constant motion on his legs, if capable of standing; but if not, by frequently shaking and moving his body. We may at the same time assiduously rub the skin with warm salt and other stimulant applications.

ÆRIAL POISONS.

The external appearances of persons suffocated by the deleterious fumes arising from charcoal, various metals, such as copper, lead, antimony, mercury, &c. as well as in consequence of sleeping in unventilated apartments, or respiring the foul air of wells, caverns, and mines, are as follow: The head, face, and neck, are swoln; the eyes are propelled from the sockets; the tongue is protruded at one side of the mouth; the jaws are closed; the face is of a livid, and the lips of a deep blue color; the abdomen is inflated; the body is insensible to pain, and the person appears to be in a profound sleep.

The first symptoms which the patient experiences on inhaling air vitiated with these deleterious fumes, are, giddiness, headach, lethargy, fainting, convulsions, and general torpor.

Persons cannot breathe where a candle will not burn. The danger from damps, or foul air is increased, by their silently extinguishing life, particularly that of fixed air(carbonic acid gas.) The ærial poison benumbs the sensibility and faculties, so that the person immersed in it is entirely insensible of his danger, and dies without a struggle.

As soon as a person is discovered, who has suffered by breathing any kind of foul air, he should be carried immediately into pure cool air, and freely exposed, being supported in a leaning position on a chair. The face should be sprinkled with vinegar, and the stomach with cold water. The legs should be put in a cold bath, likewise. After each sprinkling of cold water, rub the skin with flannel or a soft brush. Apply hartshorn to the nose, and warm water to the feet. Clysters of vinegar and water: and if there appears an inclination to vomit, promote it by a feather dipped in oil; continue the sprinkling and frictions. The first symptoms of returning life are, shivering and foaming at the mouth.

Where the means which have been mentioned fail in re-animating the patient, air may be introduced into the lungs by means of a pipe or bellows adapted to the purpose. Electricity and galvanism may also be tried. If these efforts prove successful, so that the patient seems again to breathe, he may then inhale oxygen gas. When he is able to swallow the most proper drink will be vinegar and water, or lemon juice.

ANIMAL POISONS.

This class comprises hydrophobia, and the poison of venomous serpents.

HYDROPHOBIA.

This disease is most frequent after long, dry, hot seasons; and such dogs as live upon putrid, stinking carrion, without having enough of fresh water, are most liable to it.

When any person has been bit by a dog, the strictest inquiry ought to be made whether the animal was really mad. Many disagreeable consequences arise from neglecting to ascertain that point. Some people have lived in a continual anxiety for many years, because they had been bit by a dog which they believed to be mad; but, as he had been killed on the spot, it was impossible to ascertain the fact. This should induce us, instead of killing a dog the moment he has bit any person, to do all in our power to keep him alive, at least till we can ascertain whether he be mad or not.

The poison of hydrophobia is generally communicated by a wound, which nevertheless, heals as soon as any common wound.

Symptoms.—At an uncertain period after the bite, generally, however, between the twentieth day and three or four months, pain or uneasiness occurs in the bitten part; though the wound may have been long healed.

Anxiety, languor, spasms, horror, disturbed sleep, difficult respiration, succeed, and are soon very much increased; violent convulsions affect the whole body, hideously distorting the muscles of the face; the eyes are red and protruded; the tongue swells, and often hangs out, and viscid saliva flows from the mouth; there is pain in the stomach, with bilious vomitings, a horror of fluids, and impossibility of drinking them. All these symptoms are aggravated till the sufferer is relieved by death.

Treatment.—The common notion, that this poison may lie in the body for many years, and afterwards prove fatal, is both hurtful and ridiculous. It must render such persons as have had the misfortune to be bit very unhappy, and can have no good effects. If the person takes proper medicine for forty days after the time of his being bit, and feels no symptoms of the disease, there is reason to believe him out of danger. Some have indeed gone twelve months after being bit, but seldom later.

Hydrophobia is more easily prevented than cured; but the horrible certainty of death which it formerly inspired, is now in a great measure done away. Remedies have been discovered within a few years, which seldom fail to remove this dreadful disorder, when taken in season.

To ensure effectually the person bitten by a mad dog against the consequences, it is strongly recommended, immediately, or as soon after the accident as possible, to have the bitten part completely cut out; after which bleeding should be promoted by warm fomentations, and a cupping glass applied over the part. On the removal of this glass, the wound is to be washed frequently with tobacco spittle, or a decoction of tobacco, and a poultice of tobacco and vinegar should be applied; giving, at the same time, saffron tea to prevent its striking internally. Afterwards, within a day or two, take of the red pimpernel or anagallis, half a table spoonful of the dried herb, pulverized, in beer, or honey, and repeat the dose in eight hours. Another dose may be taken in two or three days after, if thought proper, though it is seldom necessary. This has proved a certain antidote in several cases under my own observation. On one occa-

sion, where several animals, besides two or three men, were bitten by a rabid dog, all except one were given the pimpernel, and that one only died of the disorder. This herb is not indigenous to America, being originally brought from Germany, and may be found among the Germans of Pennsylvania, and in several other parts of the United States, where it has been transplanted. The legislature of Pennsylvania gave Valentine Ketrine a large sum of money for the secret of the use of this plant.

The *blue scull cap* is another well established specific antidote to the hydrophobia. It was long used with great success by a poor man of the name of Lewis, a resident of West Chester county, N. Y.

It was known to his father many years ago, and kept a secret in the family till about twenty years since, when it was discovered or divulged. Whenever man or beast had been bitten by a mad dog in the section of country in which the Lewis family resided, it had long been the custom, previous to the secret being made public, to send for one of them, who would, by administering a simple powder, destroy with certainty the poison, and effectually cure the person or animal who had been bitten. Instances have occurred of several creatures being bitten by dogs considered to be mad, and the Lewises, when applied to, have, in order to prove the value of the medicine, requested the owners to set one aside; which being done, they have cured all the rest, and the one so set aside has died with all the symptoms of hydrophobia. This circumstance places the character of the remedy beyond a doubt.

About two ounces of the dried herb scull-cap, when reduced to powder and divided into several portions, is sufficient to cure man or beast, if administered in time. The Lewises gave a dose every other day, and on the intervening days, a portion of brimstone. This course was continued for two or three weeks. Patients have been cured with his remedy even after signs of madness began to appear; but then a larger dose is required.

After symptoms of madness appear, the disorder as well as the patient become more unmanageable. In this stage a bath of vinegar, in addition to the other means recommended, is probably the most eligible resource. The patient should be placed in a barrel or some other convenient vessel, and vinegar poured on his head till the whole body is immersed in it to the chin. The vinegar will soon turn to a greenish color, when it should be changed; continuing in this manner till the poison is entirely extracted.

I have the authority of Dr. Morrison, of Utica, for adding Tory Weed, or Canadian Burr, to the list of antidotes for hydrophobia. It should be given in small doses, about as much as will lie upon a shilling piece, so as not to provoke vomiting.

VENOMOUS SERPENTS.

The grease of vipers rubbed into a wound is said to cure their bite. This is all the viper-catchers generally do when bitten, though we should not think it sufficient for the bite of an enraged viper. It would surely be more safe to have the wound well sucked, and afterwards rubbed with warm sallad oil. The practice of sucking out

poisons is very ancient. There can be no danger in performing it, as the poison does no harm unless it be taken into the body by a wound. The person who sucks the wound, however, ought to wash his mouth frequently with sallad or sweet oil, which will secure him from the last inconvenience.

The remedies for the bites of all venomous reptiles are much the same. In all cases the safest method is to have the poison sucked out immediately; first scarifying the wound, or even cutting out a portion. After this, apply tobacco spittle, or a poultice of tobacco and vinegar. Tobacco is a powerful antidote to the poison of all serpents. As a substitute, the wound may be cleansed with the juice of plantain, and dressed with the leaves. A tea spoonful of the juice should also be taken every half hour, and likewise drink freely of vinegar whey, or vinegar diluted, to make him sweat. A lobelia emetic has great effect in severe cases, in expelling the poison.

The following prescription for the cure of the bite of a rattlesnake, was discovered many years since by a negro in South Carolina, where it is considered an effectual remedy; take of the herbs plantain and horehound, in summer, roots and branches together, a sufficient quantity; bruise them in a mortar, and squeeze out the juice; of which give, as soon as possible, one large spoonful; if the patient be swelled, you must force it down his throat. This generally will cure; but if he finds no relief in an hour after, give another spoonful, which never fails. If the roots are dried, they must be moistened with a little water. Tobacco should also be applied to the wound.

The symptoms of the bite of a rattlesnake are, nausea, a full, strong, agitated pulse, the whole body swells, the eyes are suffused with blood; sometimes bloody sweat, bleeding at the nose, eyes, and ears; the teeth chatter, interrupted groans.

In regard to poisons, generally, the following rules should be observed: when any poisonous substance has been taken into the stomach, it ought as soon as possible to be discharged by vomits, clysters and purges; and when the poison has been received into the belly by a wound, it should be expelled by medicines which promote the different secretions, especially those of perspiration and urine.

The pleurisy root, in strong decoction, given in large and repeated doses, till it vomits, has often cured the bite of a rattlesnake. Another remedy which is used successfully in some parts, is muskrat skin, burned, and a table spoonful of the ashes given in molasses two or three times, with intervals of an hour.

The patient is very thirsty if the poison is diffused through the system, but he must not be allowed to drink. The Indians, when bitten, after sucking the wound, apply a strip of white ash bark above the wound, which they imagine prevents the extension of the poison, and it seems to have that effect.

The bites of spiders, and such like venomous insects, require the same treatment as above prescribed.

With regard to the stings of other insects, as the bee, wasp, hornet, &c. they are seldom attended with danger, unless a person happens to be stung by a great number of them at the same time. In this case, the parts may be bathed with salt and vinegar, or sal ammoniac and vinegar; or honey may be laid on.

LOCKED JAW.

In some instances the locked-jaw comes on suddenly; but it more usually attacks in a more general manner, in which case a slight stiffness is first perceived in the back part of the neck, which, after a short time, becomes considerably increased, and at length renders the motion of the head both difficult and painful. There is also a difficulty of swallowing, great tightness about the chest, and pain at the extremity of the breast bone, shooting into the back. A stiffness also takes place in the jaws, which soon increases to such a height that they become so closely set together as not to admit of the smallest opening.

Sometimes this spasmodic affection extends to the muscles of the back, and the spine is bent either forwards or backwards. The belly is also strongly retracted, and feels hard, producing obstinate costiveness. The spasm continuing to increase the muscles of the head and trunk become so rigidly extended as to keep them immoveably straight. The arms also become firmly extended, and the tongue is affected. The disorder continuing to advance, every organ of voluntary motion becomes affected, the eyes are rigid and immoveable in their sockets, the countenance is hideously distorted, and expresses great distress, the strength is exhausted, the pulse is irregular, and one universal spasm puts a period to a most miserable state of existence.

These affections are occasioned either by exposures to cold, when under profuse perspiration, sleeping in open air, on damp ground; by worms, by injuries of the nerves, from puncture, incision, or laceration; by wounds of tendinous parts, particularly in bleeding in the arm, which is a frequent source of these complaints. They often succeed surgical operations.

Lobelia emetics, frequently repeated, may be depended upon pretty certainly, for relaxing all spasms of this nature. They may be assisted by warm drinks, and the *fever powders*. If we cannot administer medicine without, we must extract or break out one or two teeth.

If it proceed from a wound or injury, it should be carefully cleansed of all extraneous substances, and dressed with tincture of opium, and soft ointment. Clysters may be administered with advantage. Electricity has cured.

SEA SICKNESS.

The cause of this distressing affection is the well known motion of a vessel on the surface of the water. The most alarming, nay, even fatal, consequences have been known to result from the violent retching and vomiting produced by the motion of the vessel, without it being in the power of any one to stop it; for if it be true that seasickness is only to be cured by habit, what hope can be held out to the afflicted that they will acquire this habit, without inconvenience

and without risk, such as the bursting of a blood vessel, apoplexy, idiotcy, blindness, abortion, &c., which have been known to result from excessive straining and vomiting?

People of delicate constitutions are known to derive considerable benefit from sailing on the sea; though frequently the good they have received has been more than counterbalanced by the injurious effects that have been caused by the violent sickness thereby occasioned.

Those who intend to travel by sea, and are apprehensive of sickness, should previously use gentle aperients; and afterwards, to alleviate the nausea and vomiting, drink soda water in a state of effervescence, or the mixture of sal æratus and rhubarb, or a full dose of laudanum; live sparingly; take up their station as near the middle of the ship as possible; sleep in a hammock or cot, in preference to a cabin, with their head towards the stern of the vessel; and while they are upon deck to look always in the direction the ship is sailing. Persons of a plethoric constitution should purge. Many persons, on the least motion of the vessel, are instantly taken with nausea and vomiting. Whenever the latter occurs, it should be encouraged till the contents of the stomach are ejected, by copious draughts of warm water, after which, alkalies, or laudanum, may be taken.

SUSPENDED ANIMATION, FROM DROWNING, &c.

The suspension of the vital powers, produced by immersion in water, called drowning, and that by strangulation and suffocation by noxious vapors, and lightning, are very similar, and require the same resuscitative means. As in poisons, so in cases of suspended animation, what is necessary to be done should be done quickly; therefore on the first alarm of any person being drowned, or suffocated, while the body is searching for, or conveying to the nearest house, the following articles should be got ready, viz.: warm blankets, flannels, a large kettle of warm water, heated bricks, a pair of small bellows, volatile salts, clyster pipes, and if convenient, an electrifying machine. In conveying the body to the house, the head and chest should be placed rather in a reclining position, that in case any water should have got into the lungs, it may run off at the mouth, which the motion in carrying the body, will accelerate. The head, however, should not be kept much lower than the shoulders, or even in a reclining position many minutes, otherwise the blood will gravitate in such quantity into the vessels of the head, as very considerably to impede the restoration of life, by compressing the brain.

The body being brought into a house, or some convenient place, it should be wiped perfectly dry, and wrapped in warm blankets, laying it on the right side. The most proper place would be in a large room, with a good fire; and only five or six attendants should be allowed. The first attempt should be to restore heat, and the circulation of the blood by friction, with warm flannels, or bladders filled with warm water to the pit of the stomach, and hot bricks to the feet. A free circulation of air is to be admitted into the room.

We should in the next place endeavor to expand the lungs, and if possible, make them resume their office. This may be done by inserting the tube of a bellows in one nostril, and stopping the other, as also the mouth, and gently forcing the air into the lungs till the chest is raised, then with the hand depressing the breast, and thus imitating natural breathing; a strong person with a tube in the nostril, or by putting his mouth in contact with that of the sufferer, may raise the lungs. The friction of the body, in the mean time, being continued, by other assistants.

The action of the heart should be excited by passing through its region gentle electric shocks, from the left to the right side, and from the front to the back alternately.

The bowels should be fomented and stimulated, by throwing up a quantity of warm water, with a handful of salt dissolved in it, which may be done with a clyster-pipe. A slight agitation of the body every six or ten minutes, will act as a great auxiliary to those means.

The lungs being inflated, rub every part of the body with salt and flannel cloths, carefully avoiding the access of cold, and gradually increasing the warmth as symptoms of life seem to return. Should the friction with flannel fail, apply flannels wrung out of very hot water, to the region of the heart, and sides of the chest; or, put the patient in a warm bath. If, with a vigorous employment of these means for the course of two hours, there should be no symptom of returning life, the body may be buried in warm sand, warm grains, or warm ashes, for three or four hours. Tissot mentions an instance of a young girl who was restored to life, after she was taken out of the water, to all appearance dead, by laying her naked body in the hot ashes. This author also relates an extraordinary case of recovery by the heat of a dunghill.

On the appearance of any symptom of returning life, hartshorn should be applied to the nose, and a table spoonful of warm brandy given him as soon as it can be got down.

By perseverance in such means, persons have been restored to life long after all signs had become extinct. The use of means should not be given up till four or five hours have elapsed. Rolling the body across a barrel, to expel the water, as is sometimes practised, cannot be too much reprobated.

In cases of apparent death from *suffocation* and *strangling*, the same precautions are necessary, and many of the same means are proper. In all cases of suspended animation, on the smallest appearance of respiration, or restoration to life, wine, cordials, or a little brandy, should be conveyed into the stomach, in small quantities at a time, and frequently repeated. When the patient comes perfectly to himself, he should be allowed every benefit from repose.

MATERIA MEDICA,

AND

PHARMACY.

INTRODUCTION.

MATERIA MEDICA, is that department of the Science of Medicine which relates to the knowledge of remedies, or of the effects produced in the human system by such substances as are employed for the removal of disease. The objects to be attended to in its study are, the natural history, the chemical composition and properties, and the medical powers and applications of the substances which belong to it.

The NATURAL HISTORY of these substances is of utility in furnishing appropriate characters by which they may be distinguished. Many of them bear a close resemblance to each other, and can only be discriminated by those minute and accurate distinctions which the methods of natural history afford.

From the intimate connexion which frequently subsists between those properties on which natural classification is established, and the various qualities with which bodies are endowed, natural history is likewise, to a certain extent, capable of affording indications of the virtues of remedies. Thus, in the vegetable kingdom, the different species of the same genus, and even the different genera of the same natural order, are composed of substances which frequently exert the same actions on the living system; yet to this connexion there are exceptions so numerous and important, that it is incapable of just application to any considerable extent: it can only suggest conjectures which require to be brought to the test of experiment.

The more full description of the sensible properties of the articles of the materia medica affords the most obvious method of distinguishing them, and in many cases the easiest and most certain criterion of their purity and perfection.

It has likewise been imagined that the sensible qualities of medicines afford indications of their peculiar powers. Those, for example, which are inodorous and insipid, are seldom active remedies; and those which have a similarity in taste, or flavor, have also a ge-

neral resemblance in their virtues. But though indications of this kind may be partially true, they are extremely limited in their operation. and are liable to many causes of obscurity and error.

The CHEMICAL HISTORY of the articles of the materia medica, embraces several important subjects of inquiry.

Their analysis, especially that of those belonging to the vegetable kingdom, has been supposed capable of leading to a knowledge of their virtues; and the opinion does not, at first thought, appear improbable, since the medicinal powers of any compound body, in common with its other internal properties, must arise from its peculiar composition. It may be remarked, however, that even from the researches of modern chemistry, little information of this kind can be acquired. It may be discovered, indeed, in what proximate principle of any vegetable substance its virtues reside; but this affords no previous indication of these virtues. Nor can the analysis of these principles explain the source of the powers which are attached to them in particular substances; the peculiarities of composition from which these may originate, being by far too subtile to be detected by chemical means.

Chemistry, however, is in other respects more directly useful in its application to the materia medica. It enables us, by the use of proper solvents, or the due application of heat, to separate those proximate principles of vegetables in which their virtues reside, from other inert or noxious matter with which they may be mixed; it ascertains how far these processes are useful, points out those changes in composition, by which the virtues of the substances acted on are frequently altered, and the means by which such injuries may be lessened or prevented. Similar advantages are obtained from its application to the few products of the animal kingdom that are used in medicine. Those which are derived from the mineral kingdom, can be employed with advantage and discrimination only when their composition is known; and the analyses of these substances have exploded many errors respecting them, have enabled us to distinguish them from each other, have pointed out the identity of others, and have rectified the processes by which they are prepared.

By new combinations, chemistry furnishes us with many remedies equally active and important with those afforded by Nature; and by pointing out the mutual chemical action of different substances, it guards against the errors which might arise from improper mixtures.

The last object in the study of the materia medica, that to which the others are merely subservient, is the MEDICAL HISTORY of its articles; the investigation of their virtues, or their practical uses in the treatment of disease.

This includes, in the first place, the consideration of the action of these substances on the system, in general, as this being ascertained, leads to their application in the treatment of morbid affections.

It is likewise necessary to investigate, as far as it can be done, the *mode* in which remedies act, either in the healthy or in the diseased state, and by which they produce their peculiar effects. We are thus enabled to diversify their application, to determine the cases to

which each may be more peculiarly adapted, and to discover the various circumstances by which their operations are influenced.

In considering the practical uses or applications of remedies, the objects demanding attention are the various kinds and forms of disease to which they are adapted, the circumstances which may render their application improper in particular cases, the cautions necessary in their use, their doses, together with their usual and proper modes of administration, and the effects of their combinations with each other.

PHARMACY is the art of preserving, preparing, and compounding medicines.

The PRESERVATION of medicines is its least extensive part. It includes principally the general rules for collecting plants at certain seasons, or in particular states of maturity, and those by which they are dried or preserved from the injuries they would sustain by exposure to light, air, and moisture. It comprehends, in like manner, rules for the collection and preservation of animal and mineral substances.

That part of pharmacy termed the PREPARATION of medicines, includes a variety of important operations.

The virtues of those remedies which are derived from the vegetable kingdom, generally depend on one or other of the proximate principles of each substance, on its gum, its resin, essential oil, or some other. These different principles are dissolved by different agents, by water alcohol, &c.; and as they are often, as they exist in the entire vegetable, mixed with much inert matter, it is of advantage to extract the active principle by means of its proper solvent, and to exhibit it in its pure and concentrated state. Hence have arisen the various pharmaceutic preparations of infusions, decoctions, tinctures, extracts, &c. these being all processes by which the active matter of any substance is separated from the inert matter with which it is naturally mixed, and differing only from each other in the solvent employed, or in the form to which the solution is reduced.

Sometimes, also, the principles of these substances are extracted by other means, as when an unctuous oil is obtained by expression, or an essential oil by the application of heat. This oil may also be combined with water or alcohol, and thus distilled waters or spirits are formed.

By such processes, we extract only a principle previously existing in any particular substance; we form no new remedy, but merely obtain the same virtue in a different form. In other cases, pharmacy produces remedies altogether new. These are always the result of chemical action; they are either compounds, produced by the combination of two or more chemical agents, or they are the products of chemical decomposition. In this manner are obtained the various saline and metallic preparations. These preparations too, are often dissolved in various fluids, in order that they may be conveniently exhibited; processes analogous to the infusions or tinctures of vegetable substances.

COMPOSITION is the last part of pharmacy. In this no chemical

combination is effected; but different medicines are merely mixed together with the intention of promoting their efficacy, of correcting their operation, of covering their taste or flavor, or of giving them a commodious form.

From this view of the objects of pharmacy, it is evident, that it is principally a particular application of chemistry. Its operations are either directly chemical, or require that the chemical properties of the bodies operated on should be accurately known.

PART I.

PHARMACEUTIC CHEMISTRY.

Pharmaceutic Chemistry is that department of chemical science which investigates the composition and chemical relations of bodies with a view to their medicinal properties, and explains those operations by which they are fitted to act with more efficacy or safety as remedies against disease. It includes those facts and principles which connect materia medica and pharmacy, the enumeration of which forms the proper introduction to the study of these two branches of medicine.

SECTION I.

PHARMACEUTICAL OPERATIONS.

The phenomena which it is the object of chemistry to investigate, and upon which, therefore, the principal operations of pharmacy depend, arise principally from the exertion of that power possessed by the particles of different kinds of matter, by which they have a tendency to combine together. When two different bodies are placed in contact, under certain circumstances, they unite, and form one homogeneous substance, in which the particles of either can no longer be discovered. The power whence this combination proceeds, is termed chemical attraction or affinity. It is exerted only between the *minute particles* of *different* kinds of matter, and between these only at insensible distances. The substances which it combines never separate spontaneously, nor are they capable of being separated by any mechanical means; and they form a compound possessing properties more or less different from those of its component parts.

The change of properties from combination is the most remarkable phenomenon attending the exertion of chemical attraction. The sensible qualities, and chemical properties of the compound, bear in general no resemblance to these qualities and properties in the substances of which it is formed. This, however, is not invariably true. There are a number of instances, especially in pharmacy, where the change is much less complete, as in the solutions of resins or essential oils in alcohol, or of gums or saline substances in water. But in these the marks of chemical combination are still present, the compound is homogeneous, and cannot be decomposed but by the exertion of a superior affinity.

Chemical attraction is not invariably or equally exerted by each

substance to every other. Between many substances there seems to exist no attraction, at least they cannot be made to combine together. Others have a very extensive power of combination, and seem capable of uniting with almost every substance which is not already saturated with them; and there are many intermediate, in their facility of combination, between these two extremes.

Chemical attraction is not limited, in its action, to two bodies. It can be exerted between three, four, or more, and can thus form compounds of so many principles. It can likewise unite bodies in different proportions. Some combine in every proportion, others only in limited quantities. In the latter case, the compounds formed by the different proportions have in general very different properties.

The compounds which are thus formed, have still the same relation to chemical attraction. They have a tendency to combine with other bodies, simple or compound; they can combine in various numbers and proportion; and these combinations are accompanied by the same phenomena, and regulated by the same laws.

The attraction exerted by any substance towards others, is not uniform in its force. To some it is stronger, to others weaker. Hence it follows, that if two bodies have been combined together, they may be separated, or the compound they have formed may be destroyed by presenting to it another substance, which exerts an attraction to one of its component parts, superior to the attraction by which they were held united. If the circumstances necessary to favor the exertion of chemical attraction be present, the two bodies between which there is the strongest attraction combine, and the other is separated. In chemical language this process is termed decomposition, from a single elective attraction.

A case of decomposition, more complicated, is that, where two compounds are mixed together, and where the constituent parts of the one exert attractions to those of the other, stronger than the attractions by which they are held combined in the original compounds. In this case, a complete exchange takes place, and two new compounds are formed. This is termed double decomposition, or the exertion of a double elective attraction. Tables have been constructed of the relative forces of attractions of many bodies towards others, whence may be estimated the combinations or decompositions that will take place on their mixture with each other.

The exertion of chemical attraction between bodies is greatly influenced by another power, that of heat or caloric. This is the cause of the temperature of bodies, of their expansion, fluidity, and conversion into the æriform or gaseous state. Its influence or chemical combination and decomposition is very extensive. Some bodies combine together at the common temperature of the atmosphere; others require that temperature to be raised; and in some it is necessary to expose them to a very intense heat. The same differences take place with respect to decomposition. Many bodies remain in chemical union within a certain range of temperature, more or less extensive; but whenever the heat, to which the compounds in which they exist are exposed, is increased beyond a certain degree, decomposition takes place, and the constituent principles are separated from each other. These effects are partly to be explained from the

power caloric has of weakening the force of aggregation in bodies by which their particles are held in union, and by which that power tending to separate them, in order to bring them into a state of new combination, is counteracted: and partly from the state of expansion or of fluidity produced by caloric, by which the surfaces between which chemical attraction is exerted are increased, and the minute particles of bodies are brought to act upon each other.

The OPERATIONS OF PHARMACEUTIC CHEMISTRY are entirely dependent on chemical attraction, or on the action of caloric. They are merely particular arrangements of circumstances, by which the exertion of that attraction is promoted, and the products of the combinations or decompositions which take place are obtained.

There are several preliminary operations, not directly chemical, but employed either to favor the exertion of chemical attraction, or to facilitate the medicinal operation of the substances subjected to them. They are those operations, by which bodies are reduced to a state of extreme mechanical division. The principal are PULVERIZATION, or reducing bodies to powder by beating; TRITURATION, in which the same effect is obtained by rubbing; and LEVIGATION, in which the powder is reduced to a greater degree of fineness, from the rubbing being continued longer, and being facilitated by the addition of any fluid which does not act chemically on the substance subjected to the operation. These are performed in mortars of glass, earthen-ware, or metal. As the particles into which the substance is reduced by any of these means, must necessarily be of unequal fineness, the coarser are separated from the finer, by SIFTING or passing the powder over a seive. WASHING or ELUTRIATION is an operation in which the same end is attained. The powder is agitated in a fluid, in which it is not soluble; the larger particles are allowed to subside; the liquor, holding the finer suspended, is poured off; and, on its remaining at rest, are deposited. These methods can be applied to few of the metals with advantage. They are, therefore, mechanically divided, by filing, by beating into fine leaves, or by pouring them when melted into water; an operation termed granulation, as the metal becomes solid, in the form of small grains.

These operations do not directly promote chemical action, as they are far from reducing bodies to their minute particles, between which that action is exerted: they are merely employed as prelimary to those which are more directly chemical. In pharmacy, some of them are of utility, besides promoting chemical combination, as there are several medicines which act with more certainty and power when finely levigated, than when given in a coarse powder.

Of the CHEMICAL OPERATIONS, the most important are those by which that fluidity is obtained, which is in general requisite for the exertion of chemical attraction. SOLUTION is the principal operation of this kind. It is that process in which a solid body, when immersed in a fluid, disappears, so that its particles are no longer discoverable, and upon standing do not subside, the fluid likewise retaining its usual transparency. It is merely an example of chemical combination between two bodies, which happen to exist in different forms, the compound remaining in the fluidstate. The fluid being conceived to be the more active substance, has been termed the solvent, the

solid the solvend or body dissolved. The attraction, however, whence the solution proceeds, is reciprocal, and is not more exerted by the one than by the other.

The previous mechanical division of solids, promotes their solution, by enlarging the surface between which the mutual attraction is exerted. Agitation causes the solution to proceed more rapidly, by bringing successively the different parts of the fluid into contact with the solid.

There are, in general, certain limits to the solution of solids in fluids. A certain quantity of sea-salt, for example, may be dissolved in a given quantity of water; but if more be added, it remains undissolved, and can only be diffused through the solution. When the fluid has taken up as much of the solid as it can dissolve, it is said to be *saturated* with it. The same fluid requires for its saturation very different quantities of solids; of some it can dissolve only a very small portion, of others more than its own weight. The saturation of a fluid with one substance, does not prevent it from dissolving a portion of a second, or even of a third or fourth, though it lessens the solvent power with regard to each. There are some cases in which the solvent power is apparently unlimited, or in which no precise point of saturation can be pointed out, such as the solution of sugar, gums, &c. in water.

The temperature or degree of heat has a very important influence on solution, and in varying the point of saturation. In general every solution proceeds with more facility or rapidity at a high than at a low temperature, and the fluid is even capable at the high temperature of dissolving a larger portion of the solid, though with respect to different solids, this increase of solvent power, by a given temperature, is very different.

Solution, besides being one of the most important operations in chemical analysis, is one of the most useful in pharmacy, the active principles of many substances being extracted, by means of their proper solvents. Saline substances are dissolved in water, as are also gum, sugar, and other vegetable and animal products. Resins, camphor, essential oils, &c. are dissolved in ether, alcohol, or wine; and metals are rendered soluble and active by the different acids. The operation receives different appellations, according to the nature of the solvent, of the substances dissolved, and of the manner in which it is performed. When we have a mixture of saline or earthy substances, of which part is soluble in water, or in any other fluid, while another part is insoluble, the one may be separated from the other by the due application of its proper solvent. The process thus performed is termed LIXIVIATION, and the solution obtained, a LEY. When a fluid is poured on any vegetable or animal substance, so as to dissolve only part of its principles, the operation is termed EXTRACTION, and the part dissolved is said to be extracted. If it is performed without the assistance of heat, it is termed MACERATION; if with a moderate heat, DIGESTION; if the fluid be poured boiling hot on the substance, and they are kept in a covered vessel till cold, it forms INFUSION. Lastly, DECOCTION is the term given to the operation where the fluid is *boiled* upon the substance to be dissolved.

To obtain the solid matter which has been dissolved in any fluid,

the process named EVAPORATION is employed. The liquor is exposed to heat in a vessel of such a form as to present a wide surface to the atmosphere; the fluid is converted into vapor, and the matter that had been dissolved is thus obtained in a solid state. The heat employed in evaporation should always be as moderate as possible, as the flavor of the solid residuum is otherwise apt to be injured, its composition changed, or part of it carried off with the vapour. In many cases, the heat afforded by placing the vessel containing the fluid to be evaporated over boiling water is sufficient. This forms the *water bath*.

There are many substances, especially those belonging to the class of salts, which, when their solutions are evaporated to a certain extent, concrete in masses of regular forms, hard and transparent. These are termed *crystals*, and the operation itself CRYSTALLIZATION. The first step in this process is to evaporate part of the fluid till the solution while at its boiling point is saturated, or retains in solution the largest quantity of the body which at that temperature it can hold dissolved. On allowing it to cool, the portion which the high temperature enabled the fluid to hold in solution, will separate, and crystals will be formed; and by successive evaporation, the whole of the solid matter may be obtained in the crystalline form. In like manner, crystals are formed by the slow or spontaneous evaporation which takes place when a fluid is exposed to the atmosphere, and these being formed more slowly, are even harder and more perfect in their figure than those obtained by hasty evaporation.

In crystallizing, the figure which the body assumes, is regular and peculiar to itself, and hence is established the arrangement of crystals into prismatic, rhomboidal, and other forms; these, however, are frequently varied by external circumstances.

Water is essential to the formation of crystals, and gives them their transparency. The crystals of different bodies contain very different quantites of this fluid. It is termed their Water of Crystallization; and by whatever means it is expelled, the transparency, density, and figure of the crystal is lost. If crystals lose their water of crystallization on exposure to the air, they are said to *effloresce*; if, on the contrary, water is absorbed, so that the substance becomes moist or fluid, it is said to *deliquesce*.

Crystallization is promoted by the access of the atmospheric air to the fluid, and by affording a nucleus or solid point at which the crystallization may commence. Some substances have so strong an attraction to the fluid in which they are dissolved, that they do not separate in the crystalline form, even when the solution has been considerably evaporated. They either remain dissolved, forming a liquor more or less glutinous; or if the evaporation be carried to a greater extent, they are recovered in the solid form, but destitute of any regular figure. Some of these bodies, when dissolved in water, may be made to crystallize by the addition of a small quantity of alcohol, which, by exerting a still stronger attraction to the water, weakens their combination with it. Other substances soluble in water, as gum, starch, &c. can by management be made to undergo this operation.

Besides this species of crystallization, there is a process of a similar kind to which the same term is applied. When a body has been melted, if the fluid has its temperature slowly reduced, so that it approach gradually to the point at which it becomes solid, its particles frequently unite, so as to form masses of regular figures, or crystals. This species of crystallization is not however, applied to any pharmaceutical purpose.

PRECIPITATION is another process by which a solid body is separated from a fluid. If, for example, to the solution of any solid matter in any fluid, a substance be added, which has a stronger attraction to the fluid than the solid previously dissolved in it has, the latter will be separated, and will be thrown down in its solid form. In like manner, precipitation may take place from the substance which is added combining not with the fluid, but with the solid dissolved, and forming with it a new compound no longer soluble. The process, in either case, is termed *precipitation*, the substance thrown down is a *precipitate*, and the substance by which the precipitation has been effected, is the *precipitant*.

In order to obtain a precipitate pure, it is allowed to subside; the clear liquor is poured off, the precipitate is repeatedly washed, to carry off any of the substance by which it was precipitated, which may still adhere to it; it is then dried.

The preceding operations are those in which a solid body dissolved in a fluid is recovered by abstracting part of the fluid. But there are many cases of combination, or decomposition, in which our object is rather to obtain the more volatile part of the mixture. In such cases *distillation* and *sublimation* are had recourse to.

IN DISTILLATION, the materials are exposed to a proper degree of heat, in vessels contrived so as to collect the part which passes off in vapor, condense it, and thus obtain it in the fluid form. Distillation is therefore nothing but evaporation in close vessels, with the design of obtaining the volatile products.

In many cases of distillation, the matter to be distilled is apt to be injured by the application of too strong a heat; such, for example, is the case with regard to the essential oils of plants. To prevent this, they are not exposed alone to heat, but with the addition of a quantity of water. The temperature at which water is converted into vapor, (212° of Fahrenheit) is sufficient to volatilize these oils, without injuring them. The oil therefore, rises with the vapor, is condensed with it, and is easily separated from the water, by their difference in specific gravity, a small quantity of it only being lost by being retained by the water in solution.

When the substance to be distilled is not of such a nature as to act chemically on metallic vessels, the common still, made of iron or copper, is employed. This is a cylindrical vessel, from the head of which a pipe issues, which is connected with a spiral tube, placed in a vessel filled with water. The heat is directly applied to the bottom of the still; the vapor produced passes off through the tube, and is condensed in the spiral tube (or worm as it is termed,) the cold water with which this is surrounded promoting the condensation.

Acids, or other substances that act upon metallic vessels, or re-

ceive from them a noxious impregnation, are distilled from glass vessels. The retort, or conical bottle bent nearly at a right angle, is used for this purpose: the heat being communicated to it by the medium of a sand-bath. The vapor is condensed in a conical or globular vessel, termed a receiver, connected with the retort. Where the vapor is highly elastic or difficult of condensation, a series of receivers connected together is necessary; and where it is incapable of condensation by itself, but is easily absorbed by water, a portion of that fluid is disposed in the receiver, by which it is condensed. Some bodies are impure on their first distillation; they are purified by a second distillation, which is then termed *rectification*. Or, with the proper product of the distillation, a portion of aqueous vapor may have passed over: this may be abstracted by exposing the distilled fluid again to heat, and the process is named *concentration* or *dephlegmation*.

Sublimation is another operation, by which a volatile matter is separated from one more fixed, by the application of heat; but the matter volatilized is again condensed, not in the fluid but in the solid form. The operation, therefore, is generally performed in one vessel, the sublimate being condensed in the upper part. When it concretes in the form of light flakes, it was termed flowers, in the old language of pharmacy.

Fusion is, next to solution, the principal operation by which, chemical combination is promoted. It is adapted to those cases in which the bodies designed to act upon each other are not soluble in any fluid, or at least in none that does not alter their attractions. The fluidity necessary for their mutual chemical action, is therefore given to them by the due application of heat. The operation is commonly performed in vessels termed crucibles, which are cups made of earthen ware, of black-lead, or of some metal; the necessary heat being excited and communicated in general by a furnace.

Chemical combination is also frequently promoted by the application of heat, even though the bodies are not fused. *Calcination* is an operation of this kind. It is merely the exposing of a metal to a high temperature, with the free access of atmospheric air, by which it is oxygenated. *Deflagration* is an operation of a similar kind. It consists in mixing some salts, especially nitrate of potash, in which a large quantity of oxygen is retained with a very weak attractive force, with any inflammable body, and exposing the mixture to heat. The oxygen is attracted by the inflammable substance, which is thus oxydated.

Chemical decomposition is, in like manner, promoted by an increase of temperature. One principle of a compound, which is disposed to volatility, may thus be expelled; or two bodies, one or both of which are compounds, and which when mixed together have no action on each other, may, when exposed to a strong heat, exert attractions, by which their decomposition is effected.

These are the principal operations of pharmacy. Connected with this branch of the subject, there remain to be noticed the measures

and weights which are usually employed. *Troy weight* is that ordered to be observed in the different pharmacopœias. The pound is divided into twelve ounces; the ounce into eight drachms; the drachm into three scruples; and the scruple into twenty grains. Measures are rejected by the Edinburgh college, but are admitted in other pharmacopœias, and used by the apothecaries. They are subdivided in a similar manner, and are made to answer to the specific gravity of water. A table-spoonful and tea-spoonful, (measures frequently employed), are understood to be equal, the former to half an ounce, the latter to one drachm.

N. B. Sixty drops of water, one hundred of diluted alcohol, or an hundred and twenty of alcohol, are equal to a drachm, by measure.

SECTION. II.

CHEMICAL ANALYSIS OF THE ARTICLES OF THE MATERIA MEDICA.

The consideration of the general analysis of the substances employed as remedies, must necessarily precede their particular history, as it is so intimately connected with the observations to be made on their properties, the marks of their purity and perfection, their actions on each other, their combinations, and pharmaceutic treatment.

Chemistry arranges all bodies under two classes; those which are simple, and those which are compound. The former are such as consist merely of similar parts; the latter such as can be resolved into particles different in their properties from each other, and from the compound which they had formed. From the combinations of a few simple substances, originate all the productions of nature, and all those which are the results of the operations of art.

It is the province of chemistry to trace these combinations, to determine whether bodies are simple or compound; and, if compound, to ascertain the number and proportions of their constituent parts, and the modes in which they are combined. These objects are attained by analysis and synthesis, two general operations, comprehending the greater number of the processes of chemistry.

Analysis is the decomposition of a compound, or the separation of its constituent parts. It is effected, either by exposing it to heat, when, from the unequal action of the caloric on the particles of which it is composed, they are separated from each other; or, by subjecting it to the action of a superior attraction, in other words, by presenting it to some substance which exerts an attraction to one or other of its component parts, superior to the attraction by which these were held united.

When the analysis has been effected, we may often again combine the principles obtained, so as to form the compound that has been decomposed. This forms what is termed synthesis, which, when it can be effected, is always a proof of the accuracy of the analysis. Very frequently, however, in the decomposition of a compound,

the principles that are separated, instead of passing off pure, combine in new modes and proportions, and form compounds, which then become the products of the analysis. These cannot be combined again, or, if they could, they would form a compound totally different from the substance originally analysed. They may, however, be subjected to a further analysis, and thus the ultimate principles of the compound may be accurately ascertained. The whole of the substances belonging to the vegetable and animal kingdoms are subject to this complicated analysis.

In analysing the various products of nature, we ultimately arrive at a few substances which we are unable farther to decompose, and which are therefore regarded as *simple*. Their absolute simplicity is not indeed established, but is inferred, till their composition be proved. They are simple with regard to our present knowledge of them, that is, they consist of particles, which, so far as can be discovered, are similar to each other, and they are regarded as the elements of which all other bodies are composed. It is sufficient to state their distinguishing characters, and the principal compounds which they form.

The first order of these substances, those which seem best entitled to the character of simplicity, are the SIMPLE GASES, oxygen, azot, and hydrogen. Modern chemistry has demonstrated, that these gases are solid substances, brought into the ærial form by the operation of caloric. In the new nomenclature, therefore, the name of each is given to the base, and from this the appellation of the air or gas is derived.

Of these simple bodies, OGYGEN is the most important, since it is either capable of combining with, or forms a component part of the greater number of the productions of nature. Like other gases, it is invisible, and permanently elastic; its specific gravity is a little superior to that of atmospheric air. Its distinguishing characters are its capacity of supporting combustion and animal life. It is indeed the only substance that can support either of these processes, and it is absolutely necessary to enable them to be carried on.

The influence of this air in supporting combustion, is more particularly to be assumed as its distinguishing chemical character, since so many of the most important chemical agents are formed by this operation. It is proved by the most unequivocal experiments, that combustion is nothing more than the combination of oxygen with the combustible body. Burnt bodies are therefore merely substances combined with oxygen: that principle is contained in them in very various quantities, and is retained by very different degrees of attractive force.

Many substances can also be combined with oxygen, without the phenomena of combustion taking place, that is, without the disengagement of light and caloric. This happens when the oxygen has been previously combined with another body, and is only transferred from it by the exertion of a superior affinity. It happens, too, when the oxygen is slowly absorbed from the atmosphere, at the natural temperature. It is thus that many animal and vegetable substances are altered by exposure to the air. The absorption in

these cases is so gradual, that the caloric, and perhaps the light, which are disengaged, are not perceptible.

The compounds resulting from the union of oxygen with other bodies, are among the most active of the chemical agents.

It forms one-fourth part of the atmospheric air, and it is principally upon its action that the many chemical changes produced on bodies by that air depend. United with hydrogen, it forms water, the substance which of all others has the greatest share in promoting chemical combinations.

Another order of important compounds resulting from the union of oxygen with other bodies, is that of ACIDS. These are distinguished by their sour, styptic taste; by their greater or less causticity: by their changing the vegetable colors to a red; and by their combining with the alkalies, earths, and metals, forming peculiar compounds in which the acid properties are totally lost. They are compounds of inflammable substances with oxygen, and this element derives its name from being the principle of acidity.

With the same substance oxygen is capable of combining in different proportions, so as to form different acids, the more powerful acid being generally formed by the larger proportion of oxygen.

The nomenclature of the acids is designed to express these facts. The name of each acid is derived from the substance of which, combined with oxygen, it is formed; and by a variation in termination, the different acids resulting from the different degrees of oxygenation of this base are denoted; the name of the more perfect acid terminating in the syllable *ic*, that of the one with the less proportion of oxygen in *ous*. Thus sulphur, with two proportions of oxygen, forms sulphureous and sulphuric acids.

Acids have a great tendency to combination. From this, and from the facility with which they are in general decomposed and part with oxygen, they are most active of any of the compound chemical agents, and are used in many pharmaceutic operations.

Lastly, oxygen unites with many bodies without rendering them acid; it then forms an order of bodies termed OXYDS. It in general communicates to them a greater tendency to combination. To this order belong almost all the compounds it forms with the metals, and the greater number of vegetable and animal products.

The second of the simple gases is AZOT. Like oxygen, when pure, it exists always in the gaseous form, forming azotic gas. This gas, with less than one-fourth part of oxygen, constitutes the common atmospheric air. It possesses no remarkable property by which it may be characterized, and therefore it is rather distinguished by its negative qualities. It is lighter than atmospheric air, its specific gravity, compared with it, being as 985 to 1000; it is unable to support combustion or respiration; it is not absorbed by water, at least in any considerable quantity; and it is not inflammable in the strict sense of the term, for although it combines with oxygen, yet the combination is not sudden, nor is it attended with the emission of light, and with scarcely any extrication of caloric.

AZOT combined with oxygen, in proportions in which these two elements are mutually saturated, forms a powerful acid, the Nitric; with a smaller proportion of oxygen it forms the nitrous acid. These

acids are very easily decomposed, and hence are often employed in chemical operations to afford oxygen to other bodies. With smaller proportions of oxygen, it forms two gases, neither of which has acid properties; nitrous gas, composed of 44 of azot with 56 of oxygen, distinguished by the facility with which it unites with an additional proportion of oxygen; and nitrous oxyd, consisting of 63 of azot, and 37 of oxygen, peculiarly characterized by its high exhilarating powers on the animal system. Combined with hydrogen, in the proportion of 121 parts to 32, it forms ammonia, or volatile alkali, and hence it has been supposed, from analogy, that the other two alkalies also contain azot as a constituent principle.

Lastly, azot is contained in great abundance in animal matters, and is the principle which distinguishes them, by their chemical composition, from vegetables.

The last of these simple airs is HYDROGEN. It is the lightest of all the gases, its specific gravity, when it is in its purest state, being to that of atmospheric air as 13 to 1. It is highly inflammable; one part of it mixed with four parts of atmospheric air, exploding with violence on the approach of an ignited body.

The most important compound of hydrogen is water, formed by its union with oxygen, in the proportion of 15 parts, by weight, of the former, to 85 of the latter. As a chemical agent, water is of the first importance, both from its very extensive power of combination, and from its agency in affording oxygen. It is the solvent of all saline, and of the greater number of the earthy substances; and it likewise dissolves a number of the vegetable and animal products. In these combinations, it is singular that the general law of chemical attraction, (that combination which alters the properties of bodies,) is scarcely observed; the properties of the bodies dissolved by water remaining almost invariably nearly the same, and that fluidity being merely communicated to them which is necessary for their mutual chemical action, or which renders convenient their preparation as medicines.

Water is farther an important chemical agent, by affording oxygen to a number of bodies. Thus, many of the metals are slowly oxydated by it; and in their solutions by acids, it is frequently from the water that the metal receives oxygen. The vegetable and animal products receive oxygen also from the water they contain; and in the decompositions which they suffer, whether from the reaction of their principles at a natural temperature, or by exposure to heat, the elements of the water present enter into the composition of the products which such analysis afford.

Under the appellation of SIMPLE INFLAMMABLE SUBSTANCES, are commonly described three bodies, carbon, sulphur, and phosphorus. They exist in the solid form, but are totally destitute of the metallic splendor, opacity and gravity. They are highly inflammable, and form acids when united with oxygen.

CARBON, the first of these, is an inflammable matter, the basis of common charcoal. In this substance, it was supposed to be merely mixed with oxyd of iron, and some other impurities But the experiments of Guyton have proved that it is also combined with a portion of oxygen, and that the *diamond* is the pure inflammable base. Char-

coal, therefore, or the black porous substance which remains after the imperfect combustion of wood, is an oxyd of carbon containing 36 parts of oxygen in the 100. It is inflammable. Combined with a larger quantity of oxygen, it forms a gas still possessing the property of inflammability, the gaseous oxyd of carbon. Saturated with oxygen, it forms a gas possessing the properties of an acid ; carbonic acid, or what was formerly named fixed air. Its acid powers are extremely inconsiderable, and its attractions so weak, that it is displaced from its combinations by all the other acids. Carbon, with hydrogen and oxygen, forms several compounds possessing inflammability. Some of them exist in the gaseous form, and differ slightly in their properties from each other. Alcohol, which is the product of fermentation from sugar, and which when pure is a colourless fluid, fragrant and pungent, volatile and inflammable, is a compound of a similar kind ; and ether, which is formed by the action of acids from alcohol, and which is still more light and volatile, is nearly of the same composition, differing from alcohol principally in containing a larger proportion of hydrogen.

Sulphur is a simple inflammable substance found in abundance in nature, either pure or in combination with metals. When pure, it is hard and brittle, semi-transparent, of a light yellow color, insipid, emitting when slightly heated a fœtid smell. It melts and volatilizes at a very low temperature, that of 185° ; at a temperature of 302°, it burns with a blue flame, when atmospheric air is admitted.

Sulphur combines with oxygen, hydrogen, phosphorus, with many of the metals, and indeed with the greater number of the simple bodies. Its combination with oxygen forms the sulphuric, and sulphureous acids. The latter is gaseous, has a pungent suffocating odor, and does not possess the acid properties in a very eminent degree. The former is fixed and inodorous ; in the general acid powers it is superior to any body of the same class ; it has a strong attraction to water, and is always combined with it ; it exerts also strong affinities to the alkalies, earths and metallic oxyds, and oxydates the metals, and the greater number of inflammable bodies. It is therefore extensively used in chemical and pharmaceutical operations.

With hydrogen, sulphur forms a compound, sulphurated hydrogen, which exists in the ærial form, and is distinguished by its very fœtid smell. It resembles the acids in several of its properties. Sulphur is also a component part of some animal substances, and it has even been detected in a few vegetables.

The last of these simple substances is Phosphorus, a substance with which we have been made acquainted only by the art of the chemist. It exists no where pure and uncombined, but its acid is found in great abundance in nature. In the fossil kingdom, it is combined with several of the earths and metals, and it forms a component part of many animal and several vegetable productions.

Phosphorus is always obtained by decomposing this acid, by heating it with carbon, which attracts its oxygen. The phosphorus is sublimed in close vessels ; it is of a soft tenacious consistence like wax ; transparent, of a pale yellowish color. It emits fumes, which

are owing to its combination with the oxygen of the atmosphere. From this combination, two acids are formed, according to the proportion of oxygen : the phosphorus, which is fœtid, and when heated, emits luminous vapors, and the phosphoric, which is inodorous, and more powerful as an acid than the other. Phosphorus is one of the component principles of animal substances.

Besides the acids formed by the oxygenation of these simple inflammable bodies, there are three not yet decomposed, but which are supposed from analogy to be of a similar composition ; the muriatic, fluoric, and boracic.

The MURIATIC ACID exists in sea-salt, and in various other natural substances. In its pure state it is gaseous, has a pungent suffocating odor, and extinguishes combustion. It is rapidly absorbed, and in large quantity, by water ; and it is under the form of this solution that it is generally used. It possesses in an eminent degree the general acid properties. It combines with the alkalies and earths ; and though incapable of affording oxygen directly to the metals, it affects the oxydation of many of them, by enabling them to decompose the water it contains. This acid is capable of being combined with a considerable proportion of oxygen, forming the oxy-muriatic acid. The acid powers of this are inferior to those of the simple muriatic acid ; but parting with facility with the oxygen combined with it, it acts with more energy on many inflammable substances.

The fluoric and boracic acids cannot be regarded as pharmaceutic agents.

The METALS, the third order of simple substances, are distinguished by their opacity, brilliancy, fusibility, ductility, malleability, and by possessing a specific gravity superior to that of any other class of bodies. They are truly inflammable, since they are capable of combining with oxygen, and many of them during their oxydation emit light and caloric. It scarcely comes within the limits of pharmaceutic chemistry to notice all the metals particularly : it is sufficient to take a general veiw of their properties, and of their influence in combination.

The metals are very various in their degree of fusibility. Mercury does not become solid but at a temperature equal to 40 degrees below 0 of Fahr., while iron or platina requires a very intense heat for its fusion. They differ also in their ductility and malleability. Gold is at once the most ductile and most malleable, that is, it can be drawn into the finest wire, and beat into the thinnest plates, without its texture being injured. The other metals possess these properties in different degrees, some being ductile which scarcely are malleable, and *vice versa*. Others are neither ductile nor malleable. These have been improperly termed semi-metals. Specific gravity is the property by which the metals are most clearly distinguished. The specific gravity of the heaviest stone is to that of water as 4 to 1, while that of the lightest metal is as 6 to 1.

Metals are very susceptible of combination. They unite with sulphur, with phosphorus, and with each other. Their combinations with oxygen are the most extensive and important.

This combination is effected in different ways. When raised to a temperature more or less high, with the access of atmospheric air,

they attract oxygen; some are oxydated rapidly, and exhibit all the phenomena of combustion; others undergo this operation much more slowly; and there are some (gold, silver, and platina) which can scarcely be oxydated in this manner. Several of them are oxydated by the agency of water. It is thus that iron and some others, especially when assisted by a high temperature, attract oxygen from water, the hydrogen being disengaged. Lastly, all of them may be oxydated by the action of acids. The acid itself is not only decomposed, by its oxygen being attracted by the metal, but its presence enables several of the metals to decompose the water present with great rapidity.

The results of these combinations are compounds, which in general belong to the class of oxyds. They are destitute of the metallic qualities, and are more similar to earths, being in general insipid, insoluble in water, and vitrifiable by heat. Four metals, tungsten, molybdena, arsenic, and tin, can be so highly oxygenated as to pass into the acid state.

Metals attract very different quantities of oxygen. Some combine with only a small proportion of that principle, while others can take up nearly their own weight.

Each metal, too, combines with certain different proportions, and the oxyd produced by each proportion differs in its properties from that produced by the others. The first degree of oxygenation generally produces an oxyd, having a colour not much different from that of the metal: by higher oxygenation, more brilliant colours are produced.

Metals also attract oxygen with very unequal degrees of force. Hence one metal can often be oxydated merely by heating it with the oxyd of another. Some oxyds, too, as those of gold, silver, and mercury, are decomposed by the mere agency of caloric, at a temperature not raised very high, and even by the action of light at the natural temperature.

It is principally from their combination with oxygen that metals derive their activity. They are, for instance, incapable of combining with the earths, unless they have been previously oxydated. The case is the same with respect to the acids. If the metal has not been previously oxydated, it immediately decomposes either part of the acid, or of the water present, and then this oxyd combines with the remaining acid. The union of the different metals with the different acids, is much influenced by the degree of their oxygenation; and at a high degree of oxygenation they frequently become incapable of combining with the acid. Hence many metallic solutions are decomposed by exposure to the atmosphere; the metal attracting more oxygen, and becoming insoluble in the acid. In the same manner, heating a metallic solution, often decomposes it, as it enables the metal to attract more oxygen from the acid. The different oxyds have very different degrees of attraction to the acids, and hence some are able to decompose the combinations others form.

Metals are rendered active on the system, only by being combined with oxygen, or with acids. The most deleterious of them prove innocent in the metallic state, and produce their bad effects only when given oxydated, or when oxydated by some of the animal

fluids. In general, they are more active the more oxygen they contain; and they are always rendered more powerful when the oxyd is farther combined with an acid. The mildest preparation of mercury, for example, is that prepared by trituration merely, in which the mercury approaches nearest to the metallic state, and the most virulent preparation of that metal is the corrosive muriat, in which it is very highly oxydated.

The last class of simple substances is the EARTHS. They have usually been defined substances, insipid, infusible, having little solubility, uninflammable, having a specific gravity, compared with water as a standard, always less than 5 to 1, and combining with acids to form neutral salts. Of these characters some apply only to some earths; that of insipidity, for instance, is confined to two or three; others, as lime and barytes, being considerably sapid.

These characters too are understood as applying to pure earths; substances which, so far as has been discovered, are absolutely simple. These by combination, or intimate mixture with each other, and with other bodies, give rise to a vast variety of compounds, still distinguished by the title of earths, but to which these characters are only in part applicable. Such compounds are not the objects of pharmaceutic investigation, it being only the pure earths, or combinations of them effected by art, that are used in medicine.

The principal earths are six; silex, argil, magnesia, lime, barytes, and strontites. Of late two or three others have been discovered, but in quantities so minute as not to require notice in this sketch.

SILEX, though an abundant ingredient in stones, scarcely exists pure in nature. When obtained by a chemical process, it is in the form of a light white powder. Its chemical character is its little susceptibility of combination. It unites with none of the acids, the fluoric excepted. It is dissolved by potash and soda; and by fusion it combines with the earths and metallic oxyds.

ARGIL is distinguished by insipidity, infusibility by heat, insolubility in water, and by forming a ductile paste with that fluid, but more completely by the compounds which it forms with acids. It is never used in medicine in its pure state; but some of its compounds, especially that resulting from its union with sulphuric acid, are employed. The salts formed by its combination with acids, have one general medicinal character, that of being possessed of a considerable degree of astringency.

MAGNESIA, when pure, is always in the form of a fine white very light powder. It is infusible; insoluble in less than 2000 parts of water, and does not form with it a ductile paste; is somewhat sapid; changes the colours of vegetables to a green, and forms with the acids peculiar neutral salts. It is never found in a pure state in nature, but is always the produce of art.

Magnesia, in its pure state, is extensively used in medicine, as are also several of its compounds. It is given as an antacid, and the salts it forms with the acids have all a cathartic power.

LIME is distinguished by its disagreeable, penetrating, styptic taste. It attracts water rapidly from the atmosphere; it is heated when water is poured on it, and falls into a dry white powder; it is soluble in about 700 parts of that fluid, and its solution changes the vege-

table colors to a green. In the fire, it is infusible by itself; however, when mixed with the other earths; it combines with almost all the acids.

Lime is used in medicine as an antacid, as an astringent, and as a remedy in calculus. It is given in the form of solution in water. Some of its compounds, particularly that with the carbonic acid, are also used to correct acidity, and are sometimes preferred, as being less acrid than the pure lime.

Barytes is distinguished by its great specific gravity, which is superior to that of every other fossil not metallic. In nature, it is always found combined with the sulphuric or carbonic acid. When pure, it is in the form of a very fine white powder; it is fusible and soluble in 20 parts of water, its solution changing the vegetable colors to a green; its attractions to the acids are in general much superior to those of any of the other earths.

Barytes has a much more powerful action on the system than the other earths have. Even in a small dose it occasions vertigo, insensibility, and other nervous symptoms. From this circumstance, as well as from its great specific gravity, some have supposed that it is a metallic oxyd, which we have hitherto been unable to decompose.

Strontites is, in many of its properties, similar, to barytes. Like it, it is found in nature combined with sulphuric and carbonic acids, and these compounds are distinguished by great specific gravity. It is fusible, but less soluble, requiring 200 parts of water for its solution. Its saline combinations are, on the contrary, in general, more soluble than those of barytes. It has no poisonous quality, or does not appear to exert any great activity on the animal system.

The Alkalies are somewhat analagous in their properties to the earths; they are distinguished by the following characters. They have a penetrating acrid taste; change the vegetable colors to a green; have a strong attraction for water, unite with oils, and combine with the acids, forming neutral salts. There are three substances of this kind; potash, soda, and ammonia. There is reason to believe that they are compounds. One of them, ammonia, is proved to consist of azot and hydrogen, which renders probable the opinion that the others are also compounds, though they have not hitherto been decomposed.

Potash is the most powerful of these substances: it is solid, and crystallizable, of a white color, is highly acrid and caustic, has so strong an attraction to water as to take it from almost any other substance. It melts at a moderate temperature; by fusion with siliceous earth it forms glass: it has a stronger attraction than either of the other alkalies for the acids, and therefore the compounds it forms are not easily decomposed.

This substance is obtained from vegetable matter, principally the ligneous part. This is made to burn slowly, till its carbon is totally destroyed: a saline mass remains, which consists principally of potash. There is reason to believe that it is formed during the combustion, since, although it can be detected by other means as a component principle of vegetable matter, it is only in some vegetables, and never in such quantities as are afforded by the combustion.

The physical characters of soda are so precisely the same with

those of potash, that it is scarcely possible to distinguish them when both are in a state of purity. Soda, it is said, attracts humidity from the atmosphere less rapidly than potash.

It is by their combinations, however, that they are principally distinguished. The salts, in particular, which soda forms with the acids, are totally different in their properties from those that have potash for their base. It forms glass with silex in the same manner as potash.

Soda is obtained as well as potash by burning vegetables. It is, however, only sea plants, or those that grow by the sea shore, that afford it: it has therefore been supposed, that these plants may contain sea-salt, or muriat of soda, and that it is from the decomposition of this salt that the soda is derived.

The third of these alkalies, AMMONIA, differs much from the others. It can never be obtained in the solid or fluid form, but when pure, is always in a state of gas: it is absorbed in great quantity by water, and thus forms a solution of pure ammonia. Its smell is extremely pungent: it is also volatile, escaping gradually from the water in which it has been dissolved: hence it has received the appellation of volatile alkali. It is considered as a less powerful alkali than either of the others: it does not combine with the siliceous earth; it acts more feebly on animal matter, and it adheres to the acids with much less force.

Ammonia is composed of azot and hydrogen, in the proportion of 121 of the former to 32 of the latter. It is obtained in great quantity by exposing animal substances to heat: they are decomposed, and part of their hydrogen and azot combining, form ammonia.

The alkalies are all used in medicine, and their combinations form some of the most important articles of the materia medica. They are also important pharmaceutic agents.

With the alkalies, earths, and metallic oxyds, the acids combine and form an order of compound termed NEUTRAL SALTS. In these, the properties of the acid, as well as of the base with which it is united, are in general lost; the compound acquires some new properties: it has in general a considerable attraction for water, and it is capable of assuming a crystalline form. The acids adhere with very different degrees of force to these bases; in general the attractions of the earths to the acids are greater than those of the metallic oxyds; and those of the alkalies greater than of the earths.

The names of the neutral salts are taken partly from the acid, and partly from the base; the generic name is derived from the acid, the specific from the base to which it is united. Thus, all the salts composed of the sulphuric acid, are arranged together under the name of sulphats; and each species is named from the substance to which the acid is united, as the sulphat of potash, the sulphat of lime, &c.: and as each acidifiable base can be combined with different proportions of oxygen, so as to form acids of different qualities, the salts formed by these are distinguished by a variation in the termination of the generic name. Thus, the salts formed by the sulphureous acid are termed sulphites. In this manner the nomenclature of all the compound salts is established.

It remains to notice the analysis of the VEGETABLE and ANIMAL

PRODUCTS, important in a pharmaceutic point of view, as so many of them are employed in medicine. The vegetable kingdom, in particular, furnishes by far the greater part of the articles of the materia medica.

The substances which are the products of organization, are very different in their chemical characters from those belonging to the mineral kingdom.

The latter we can easily analyze. We can determine the number and proportions of their constituent principles with accuracy, and their analysis can often be confirmed by synthesis; in other words, we are able by artificial combination to form compounds possessed of the same chemical qualities as the bodies we have analyzed. But with regard to the products of the vegetable and animal systems, the case is extremely different. If we are able to detect their component principles, we can scarcely determine their proportions; much less are we able to ascertain the mode in which they are combined. In no instance, therefore, does the analysis enable us to combine the principles, whether proximate or ultimate, which we have obtained, so as to form any compound at all resembling that which has been analyzed. These productions, too, consist of a few principles, chiefly of carbon, hydrogen, and oxygen, with the addition of azot and phosphorus in the animal kingdom, while the compounds belonging to the mineral kingdom are more varied in their composition.

The products of organization are likewise distinguished by susceptibility of decomposition. Their principles, having strong mutual attractions, are disposed to react on each other; and if this be favored by humidity, or slight increase of temperature, new combinations are formed, whence the original compounds are destroyed.

In the analysis of these substances, it is necessary to mark an important distinction,—that between the proximate and ultimate principles of a compound. Two compounds may unite and form one substance; and this substance, by the means which analysis affords, may be resolved into the compound bodies of which it was immediately formed, or into the simple principles of which they consist. The former are its proximate, the latter its ultimate principles. The proximate principles of vegetable products are gum, resin, oil, &c.; their ultimate principles, are chiefly carbon, hydrogen and oxygen.

In subjecting any vegetable to analysis, the first object is to discover what are its proximate principles. For this purpose we subject it to the action of caloric, and of different chemical agents.

By the first, we separate those principles that are volatile, such as the essential oil. The application of this mean is, however, very limited, since an increase of temperature, not much exceeding that which is necessary to disengage any of their volatile principles, tends not merely to separate, but actually to decompose them. It is necessary, therefore, that the temperature should not exceed 212° of Fahrenheit's scale, is obtained by heating these substances with water, when the volatile principles escape without any decomposition along with the aqueous vapor.

Of the different chemical agents useful in the vegetable analysis, water dissolves the gummy and extractive parts, the saline substances, and several other principles of inferior importance. Alcohol

dissolves the resin, balsam, camphor, and essential oil. The substances which alcohol dissolves are separated by water; while the gum, which water holds in solution, is precipitated by alcohol. Ether dissolves the same principles as alcohol; it farther dissolves the elastic gum of some vegetables, and it precipitates the extractive matter from water. The alkalies discover several of the acids contained in vegetable substances, and the acids are sometimes used as tests.

Lastily, in the analysis of vegetables, we are often able to procure several of their proximate principles by mechanical means, particularly by expression. Sometimes, also, they exude spontaneously from the growing vegetable, or are obtained from it by incisions made in the branches or trunk.

After we have discovered the proximate principles of vegetables, the next step is to ascertain their composition. This, with respect to their ultimate principles, is nearly uniform; the differences in their chemical properties and sensible qualities arising principally from differences in the proportions of these principles, and in the modes in which they are combined. These differences are too subtile to be very accurately determined by analysis, and hence this species of investigation is now acknowledged to convey no information on the medicinal powers of vegetables. Besides carbon, hydrogen, and oxygen, which are their principal constituent parts; some of them contain azot and phosphorus, which modify their properties. Various metals, too, particularly iron and manganese, lime and the three alkalies, either pure, or in combination with some of the acids, are not unfrequently constituents of vegetable matter, though never in any considerable proportion, nor is it certain but that some of these are formed during the analysis by which they are obtained.

The proximate principles of vegetables are sometimes analyzed by mere exposure to heat; their elements enter into new combinations, and from the products we discover what the principles were, and even, to a certain extent, in what proportions they had been united. Sometimes the atmospheric air is admitted when they are raised to the temperature of ignition, and by collecting the substances formed by their combustion, we form a similar judgment as to their composition. Others of them are capable of undergoing fermentation; and from the products of this process, the constituent principles of the substance operated on are determined. Lastily their analysis may often be effected by the agency of the nitric acid, which communicates to them oxygen, and by the resulting compound ascertains the nature of their acidifiable base.

The proximate principles of vegetables are numerous, and of very different kinds. They are not all to be met with in every plant, or in every period of vegetation, but each of them is to be found in some plants, at certain periods of their growth.

They are all the products of vegetation from a common juice or sap, which circulates freely through every part of the vegetable system, which is uniformly supplied by absorption, and which is perpetually changing its composition, according to the state of the plant. This sap being brought into contact, in the vessels of the vegetable, with the gaseous bodies absorbed by its leaves, is by the action of

these vessels, assisted by the agency of light, changed in its composition, and thus the peculiar products of the vegetable are formed.

The first transition of the sap seems to be into MUCILAGE or GUM, as this is one of the proximate principles contained in the greatest quantity in vegetables, and which is abundant in young plants. It is an inodorous, insipid and glutinous substance, soluble in water in every proportion, and forming with it a viscid solution termed mucilage. It is insoluble in alcohol, ether, or oil, and is precipitated from its solution in water by the addition of alcohol, or any of the alkalies. It does not absorb oxygen from the atmosphere; it is neither fusible nor volatile. At a temperature superior to 212°, but inferior to that of ignition, it is decomposed, affording pyromucous or rather impure acetous acid, ammonia, carbonic acid and carbonated hydrogen gases, its residuum being charcoal containing lime. The principal products of its combustion are carbonic acid and water. By the action of nitric acid, it is converted into oxalic acid. The experiments of Mr. Cruickshank, prove it to be composed of oxygen, hydrogen, carbon, azot, and lime.

Gum is obtained by spontaneous exudation, by incisions made in the trunk of the growing vegetable, or by decoction of any vegetable containing it in water. No proper distinction exists between it and mucilage. As a medicine, it has little activity. From its chemical qualities it is of more importance; as its mixture, with the other vegetable principles, renders them more soluble in watery liquors, by which their action on the stomach is promoted. In pharmacy, it is employed to render oils, balsams, &c. miscible with water.

RESIN is another of these proximate principles, most abundantly diffused through the vegetable kingdom. It is often united with gum, but some vegetables exude juices purely resinous. Resin is insoluble in water, is soluble in alcohol, ether, and oils; is not acted on by oxygen at any natural temperature, but burns when heated to ignition; is fusible at a temperature nearly of boiling water, but incapable of being volitalized without being decomposed. The products of its decomposition by heat are, water, acetous acid, an empyreumatic oil, and a residuum of charcoal. Its constituent parts, therefore, are carbon, hydrogen and oxygen.

Resins are frequently odorous and sapid. They are more active than gums, with respect to their medicinal effects, the virtues of many of those vegetables which act most powerfully as medicines depending on their resinous part.

Gum and resin are often intimately mixed in vegetables, forming a gum-resin. Some of the most active articles of the materia medica, are natural compositions of this kind.

A proximate principle of vegetables, which till lately, was always confounded with gum-resin, is that termed by the French chemists EXTRACT OR EXTRACTIVE MATTER. The peculiar character by which it is distinguished from gum, resin, or any mixture of the two, is its being equally soluble in water and in alcohol; hence its solution in the one fluid is not precipitated by the addition of the other. The extractive principle also, when dissolved in water, and, heated to 212°, in contact with the atmospheric air, absorbs oxygen with avidity, which neither gum nor resin does. By this absorption,

it is converted into an insipid inert substance, no longer soluble in water. By the oxygenated muriatic acid, it is also changed into an insoluble concrete of a yellow color. These poperties seem sufficient to characterize it as a distinct principle; but there is still some obscurity respecting the mode of its existence in vegetable products. According to the French chemists, it is the principle upon which the virtues of many vegetable medicines depend, though it is difficult to obtain it unmixed with the other principles. By exposure to heat, it affords an empyreumatic acid and oil, and a small quantity of ammonia. Its elements, therefore, are carbon, hydrogen, azot, and oxygen.

Oil is a very common proximate principle of vegetable matter; it is of two kinds, expressed, or unctuous oil, and distilled, volatile or essential oil. These have some common qualities, they are inflammable, insoluble in water, and unctuous, to the touch; but they are also possessed of peculiar properties by which they are distinguished.

The first class, the expressed, fat, or fixed oils, are thick and unctuous, nearly insipid and inodorous; they congeal on exposure to cold, are soluble in water or in alcohol; they combine with the alkalies, forming soaps; they are not volatilized at the temperature of 212°; they are decomposed in close vessels, and burn when the atmospheric air is admitted, the products of the combustion being water and carbonic acid. At a natural temperature they slowly absorb oxygen, and by long exposure to the air they are thickened, and at length become concrete. They consist of carbon and hydrogen in the proportion nearly of 12 of the former to 3 of the latter.

Expressed oils are generally contained in the seeds and fruit of certain vegetables. They are extracted by expression or decoction with water, and are thus frequently in part impregnated with the extractive, mucilaginous, or resinous particles, whence in some instances they derive taste, odor, and even some medicinal virtues. In general, however, they are insipid, and are used in medicine principally for their lubricating quality; they are diffused in water by the medium of gum or sugar, or by the addition of a small quantity of any of the alkalies.

Volatile, essential, or distilled oils, differ from the expressed oils in several of their properties. They are volatile at a low temperature, are entirely and quickly converted into vapor, at the heat of boiling water, without being decomposed; they are soluble in a small proportion in water, and are more abundantly soluble in alcohol; they do not combine with the alkalies with facility; they are more highly inflammable than the fixed oils, and, on exposure to the atmosphere, slowly absorb oxygen, are thickened, and are at length converted into substances of a resinous nature. In their composition, they contain more hydrogen proportioned to their carbon than the fixed oils do.

The essential oils are in general highly odorous, pungent, and often very acrid; they exist in greatest quantity in the aromatic plants, and are usually obtained by distillation; the vegetable being heated to 212° along with water, and the oil being volatilized with the aqueous vapor. As medicines, they possess a highly stimulating power.

In many vegetables there exists a natural combination of essential

oil and resin, forming a fluid more or less thick and tenacious, usually also odorous and pungent, termed a *Balsam*. Balsams also contain a quantity of a peculiar vegetable acid, the acid of benzoin.

Another proximate principle of some vegetables, similar in many of its properties to the essential oils, is CAMPHOR. It is a solid tenacious concrete, of a white color, semi-transparent, having a strong peculiar smell, and a penetrating taste. It is insoluble in water, but completely soluble in alcohol, ether, and oils; it evaporates at the common temperature of the atmosphere, and is volatilized in close vessels without decomposition. When its volatilization, however, is prevented, and heat applied, it is decomposed; a volatile oil, fragrant and pungent, of a rich yellow color, amounting nearly to one third of the weight of the camphor, distils over; a quantity of charcoal remains as a residuum, and hydro-carbonate, and carbonic acid gases escape with a portion of the peculiar acid termed camphoric. Camphor, therefore, differs from the essential oils, in containing a larger proportion of carbon, and perhaps also of oxygen.

Camphor is found in distinct vesicles in the wood and bark of several vegetables; it is also contained in many essential oils. As a medicine, it possesses considerable powers.

The same relation which camphor has to the volatile oils, WAX seems to bear to the fixed oils. This substance is a product of vegetation. It is solid and tenacious, easily fusible, and inflammable. It does not combine with the alkalies, but, when melted, unites with expressed or essential oils. It consists of carbon and hydrogen, in the proportion nearly of 13 of the former to 2 of the latter: some have supposed that it also contains a quantity of oxygen.

FECULA is a name appropriated to a dry, white, insipid powder, contained in many vegetables, particularly in the tuberose roots and gramineous seeds. It is extracted by beating the dried root, wood, or seeds, with a large quantity of water; the fluid becomes milky, from the diffusion of a white powder through it. This, when dried, is the fecula, which, when not united with any of the other principles of the vegetable, is mild and insipid. It is insoluble in cold water, but with boiling water it forms a jelly. It is also insoluble in alcohol. It is an oxyd having carbon and hydrogen for its base. It is capable of being converted by certain processes into saccharine matter. By destructive distillation it affords a large quantity of acetous acid. The fecula is the most nutritious principle of plants, and is contained in great quantity in all vegetables used as food.

GLUTEN.—The farina of some vegetables is found to contain a viscous, elastic, and fibrous-like substance, which, from its close resemblance in properties to the animal product termed gluten, has been named vegetable gluten. It is insipid, elastic, totally insoluble in water, and very sparingly soluble in alcohol. By the action of nitrous acid, it is converted into oxalic acid, and by exposure to heat in close vessels, it affords a large quantity of ammonia. Its analysis proves, that it contains more azot than any other vegetable principle.

ALBUMEN.—This is another principle of vegetables, which re-

ceives its name from its resemblance to a principle of animal matter. It is soluble in cold water, its solution being coagulated by heat or by alcohol; it is liable to putrefaction, and furnishes a large quantity of ammonia on exposure to heat. It abounds in the juices of several acrid and narcotic plants, and is also contained in the gramineous seeds.

SACCHARINE MATTER.—This exists in many vegetables, particularly in their fruits and roots, generally united with their gum and extractive matter. When pure its taste is sweet. It is soluble in water and in alcohol; is capable of crystallization. By fermentation, it is converted into alcohol, as this, by a second stage of fermentation, it is changed into acetous acid. By the action of nitrous acid, it is converted into oxalic acid. By decomposition by heat, it affords more than half its weight of acetous acid; a small quantity of empyreumatic oil, carbonic acid, and hydro-carbonate gases, the residuum being charcoal. It consists of oxygen, carbon, and hydrogen.

ESSENTIAL SALTS.—The saline substances contained in vegetables have been termed their essential salts. They are either acids or neutral salts.

There are seven acids found native in vegetables; the malic, citric, oxalic, gallic, tartarous, acetous, and benzoic. The first five consist of carbon and hydrogen, brought to the state of an acid by oxygen, and differ from each other chiefly in the proportion of hydrogen and carbon they contain.

The oxalic acid contains the largest proportion of oxygen; and it is into it that several of the other acids, and many of the vegetable oxyds, are converted by oxydation. It is very soluble in water, and crystallizable. It is distinguished by the very strong attraction which it has for lime, which it takes from every other acid. As it exists in vegetables, it is commonly united with potash, but so that the acid is present in excess.

The malic acid is contained in apples and in many other fruits before they are ripe. It does not crystallize; it contains more oxygen than the citric acid does, and is converted into the oxalic acid by the action of the nitrous acid.

The citric acid is soluble in water and crystallizable; it has a stronger attraction to the earths than to the alkalies; it is not, like the malic, convertible into oxalic acid.

The tartarous acid, as it exists in vegetables, is generally combined with potash, but in such a quantity as still to leave an excess of acid. From this salt the pure acid of tartar is obtained; it is very soluble in water, and is crystallizable; it is convertible into oxalic acid; it is decomposed by heat, and affords more empyreumatic oil than any of the other acids; hence, it has been inferred, that it contains a larger proportion of hydrogen.

The acetous acid, though generally the product of fermentation, has been found in the sap of the vine, and in some other vegetables. It is decomposed in a high temperature, and along with the usual

products of the decomposition of vegetable matter, it yields a small quantity of ammonia.

Benzoic acid is contained in several balsams and gum resins: it is highly fragrant, and has a pungent acidulous taste; it is volatile and inflammable, is sparingly soluble in cold water; it is dissolved in considerable quantity by boiling water, and on cooling, crystallizes in white flakes.

The last of the native vegetable acids is the gallic acid, hitherto distinguished as the principle of astringency. It exists in gallnuts, and in all those vegetables termed astringents. It is extracted either by maceration with water or by sublimation. It is distinguished from every other acid by the strong attraction which it has for the oxyds of iron, and by forming with them a precipitate of a very deep black color. It contains a very large quantity of carbon, combined with an inferior proportion of oxygen, and with a very small quantity of hydrogen.

A principle, which till lately was confounded with the gallic acid, is TANNIN, or the tanning principle. It is distinguished from every other principle by its power of combining with animal jelly, and forming a substance absolutely insoluble in water. It is contained in considerable quantity in the greater part of the vegetable astringents, and is generally mixed with the gallic acid.

Several of the native vegetable acids exist together in the same vegetable. They are never contained in distinct vesicles, but are either mixed with the mucilaginous or saccharine juice, or are combined with the alkalies or earths. Combinations of these acids with lime or potash, are, in particular, very abundant in the vegetable kingdom. Compounds formed by the union of the sulphuric, nitric, muriatic, carbonic, and even phosphoric acids with the alkalies and earths, also exist in many vegetables.

The last of these proximate principles is the LIGNEOUS part, or woody fibre. It is the basis to which the others are attached, and composes the greater part of most vegetables, as it forms their entire structure. It is insipid and insoluble in water or alcohol, and consequently remains as the residuum, after the active principles of any vegetable have been extracted by the action of these solvents. By the action of the nitrous acid, it affords the malic and oxalic acids; by distillation it yields the pyroligneous acid. Its principal constituent part is carbon, combined with hydrogen and oxygen.

Besides those principles of vegetables which can be exhibited as distinct bodies, there are some of a more subtile kind, the existence of which has been maintained by many chemists; such as the aroma or spiritous rector, the coloring principle, the bitter principle, the narcotic principle, and several others. The existence of these, however, is very doubtful; the properties of smell, taste color, &c. being probably the result of peculiar variations in the composition of some of the known principles of vegetables, and not depending on any peculiar principle. The odor of vegetables, for instance, generally depends on their essential oil; and all the facts that have been stated in support of a distinct aroma, are explicable on the

known volatility of these oils, or on the probability of part of them being dissolved by the atmospheric air.

After this enumeration of the proximate principles of vegetables, it may be proposed as a question of some importance, whether they exist in the vegetable in a state of chemical combination, or whether they are merely mixed together?

The latter seems most probable. These principles can often be distinguished as existing separately from each other, and even as placed in separate cells; they can in many cases be separated by mechanical means; and even where they are more intimately mixed, that change of properties does not take place, which we must have expected were they chemically united, the virtues of each principle being discernible in the entire mixture, weakened, but not changed. It seems to follow, therefore, that the virtues of vegetable substances do not depend on chemical combinations of their proximate principles, but rather on the peculiar ultimate composition of one or other of these principles. Hence also it is evident, that in separating the proximate principles of any vegetable, we cannot expect to alter or improve its virtues, farther than in concentrating them by a separation from what is inert, or in separating principles which are possessed of different, or even opposite powers. The attainment even of these ends, however, is, in innumerable cases, of importance in their exhibition as medicines.

From this enumeration of the proximate principles of vegetables, we may perceive the reasons for those pharmaceutic processes to which plants are usually subjected.

By infusion in water, we impregnate the fluid with the gum, sugar, extract, tannin, saline substances, part of the essential oil, and part also of the resinous principle. The aroma of the plant is generally first taken up: by longer infusion the water is loaded with the coloring astringent and gummy parts: these are also most abundantly dissolved when the temperature is high. Hence an infusion differs according as the water has stood longer or shorter on the materials, and according as it has been promoted or not by heat. An infusion made in the cold is in general more grateful, while one made with heat, or by keeping the fluid long upon the materials, is more strongly impregnated with active matter.

By decoction or boiling, the solvent power of the water is still farther increased; and hence the liquor always appears darker colored, and is, in fact, more loaded with the principles of the vegetable which it can hold dissolved. The volatile parts, however, particularly the essential oil, are entirely dissipated; and therefore it is an improper process for those vegetables whose virtues depend, wholly or partially, on these parts. Even the fixed principles of vegetables, at least some of them, are injured by long decoction. The extractive matter, for instance, gradually absorbs oxygen from the atmosphere, and is converted into a substance nearly insipid and inert. Opium, Peruvian bark, and many other vegetables, are injured in this manner by decoction, especially if the atmospheric air is freely admitted; and these two circumstances, the dissipation of the volatile matter, and the oxygenation of the extractive, considerably limit the application of this process. It is still used, however, with advan-

tage, to extract the mucilaginous parts of vegetables, their bitterness, and several other of their peculiar qualities.

Alcohol may be applied to vegetables to extract those principles which are not soluble in water. It dissolves entirely their essential oil, camphor, and resin; and as these are often the parts on which the virtues of vegetables depend, these solutions, or tinctures as they are termed, are often active preparations.

Equal parts of alcohol and water, in general, extract still more completely the active matter of plants, as we thus obtain a solution of all those substances which are separately soluble in either of these fluids.

When by the action of one or both of these fluids, we obtain a solution of the active principles of a vegetable, the solution may be evaporated to the consistence of a thick tenacious mass. This forms what is termed an extract: it is termed an aqueous extract, when obtained from an aqueous infusion or decoction of a plant, and spiritous when alcohol has been the solvent. The design of this preparation is to obtain the active matter of the vegetable, in a small bulk, and in such a state that it may be preserved a long time without suffering any alteration. It is evident, that it is a process which can be properly applied to such plants only as have their virtues dependent on some of their fixed principles, and even these are often injured by the heat employed, and the free access of the atmospheric air.

Distillation is another process applied to vegetable substances, by which we obtain some of their active principles, particularly their essential oil. If the vegetable matter be heated along with the water, the oil is volatized, along with the aqueous vapor: it separates from the water on being allowed to remain at rest; a part of it, however, is also dissolved, and communicates to the water a considerable degree of flavor, and often also of pungency. This forms what are termed distilled waters. If alcohol be used instead of water, the essential oil is completely dissolved in it, and we thus obtain what are termed distilled spirits.

By such processes we extract the active matter of vegetables from the inert matter with which it is more or less mixed, and are enabled to administer many remedies under a variety of forms, suited to particular circumstances. A single example will show the utility of investigations of this kind, respecting the component principles of vegetable products, and their relations to the more important chemical agents. Peruvian bark is one of the most important remedies in the materia medica. Practitioners have not always found it practicable to exhibit it in substance with advantage, as where the stomach is uncommonly irritable, or where, from the nature of the disease, it is necessary to give it in large doses, frequently repeated, it is apt to occasion sickness and other uneasy sensations, and even to be rejected by vomiting. Such inconveniences are attempted to be obviated, by giving it in the different forms of infusion, decoction, tincture or extract, as any of these may best agree with the patient. Our knowledge of its constituent parts can only lead us to the proper application of these processes. From an accurate analysis of it, it has been proved that seven parts out of eight of it, consist of woody fibre, or of a matter inert and insoluble, which cannot act on

the system, and which affects the stomach only by its weight and insolubility. The remaining eighth part is that in which the activity of the medicine resides: it is therefore evident that if this be extracted, without injuring its activity, the medicine could be exhibited with much more advantage. This is in part accomplished by the preparations of it that have been mentioned; but even these do not convey it in all its force. If one ounce of the bark be infused or boiled in a certain quantity of water, the infusion or decoction is not nearly equal in efficacy to the whole quantity of bark operated on. It is therefore evident that during either of these operations, the active matter of the bark has not been entirely extracted, or has suffered some change. And here chemistry lends her assistance, and still farther elucidates the peculiar nature of this substance, and the changes produced in it by these processes. It has been proved by experiments, that the matter on which the power of the bark depends, has a strong attraction for oxygen at a temperature moderately increased; that during the infusion, and particularly during the decoction of that drug, this active matter absorbs oxygen from the atmosphere, and is converted into a substance insipid and inert. This leads to the improvement of the preparations of this medicine; and experiments instituted for the purpose, have accordingly proved, that, while by long boiling, the virtues of the bark are nearly totally destroyed, they are fully extracted by a few minutes decoction in covered vessels. The same investigations have pointed out the nature of the action of some other substances on bark, formerly not well understood. Thus, it has been found by experience, that the alkalies, and more particularly magnesia, enable water to extract the virtues of bark, more completely by infusion,—a circumstance elucidated by the fact since discovered, that the extractive matter of the bark, to which its activity is owing, combines with facility with these substances, and forms soluble compounds.

Similar examples might be given of several other important vegetable remedies, which would sufficiently prove the utility to be derived from the analysis of the vegetable kingdom, and that indeed researches of this kind are absolutely necessary for the preparation of substances belonging to it as medicines.

It remains only to notice the animal analysis. But on this few observations need to be made; as there are comparatively but a small number of the articles of the materia medica which belong to the animal kingdom.

The animal products have the same general chemical characters as vegetables. They differ from them in being more liable to the process named Putrefaction; and in affording a large quantity of ammonia, when decomposed by heat. These differences depend principally on the presence of azot in a much larger proportion in the animal than in the vegetable products; which during their decomposition, combines with the hydrogen they also contain, and furnishes the ammonia which is so abundantly discharged. Animal substances also contain sulphur and phosphorus; and in general a smaller proportion of carbon enters into their composition than into that of vegetables.

Notwithstanding these differences, there are many of the animal

products which closely resemble the vegetable principles in their properties. The vegetable gluten and albumen are similar to the animal. The vegetable oils and butters resemble the animal fats. Gelatin has a resemblance to mucilage or fecula. A principle similar to the vegetable saccharine matter is found in milk. In some of the animal secretions, there are substances of a resinous nature; and the animal acids do not differ greatly from the vegetable compounds of the same class. Many of these substances, therefore, are acted on by chemical agents in a similar manner to vegetables, and, for medicinal purposes, are subjected to similar pharmaceutic processes.

PART II.

MATERIA MEDICA.

UNDER this head are comprised simple and prepared medicines, such as are used in the cure of diseases; to which is subjoined a short view of their natural, medical, and pharmaceutical history, with the virtues and doses of each. It would be an unnecessary task to enumerate and describe all the articles that have acquired the name of medicine, but I trust that a sufficient collection will be found in this work, not only to subserve all the useful purposes of the physician, but also to enable him to understand the nature and proportion of most of the remedial articles now in use, even though he may dissent from the employment of them.

In explaining the operations of medicines, and classing them according to these operations, it is to be regarded as a first principle that they act only on the living body. The presence of life is accompanied with peculiar properties, and with modes of action inexplicable on mere mechanical or chemical principles. Substances acting on the living system no doubt produce effects referable to these; but the changes they produce are also always so far modified as to be peculiar in themselves, and regulated by laws exclusively belonging to organized matter.

Medicines, in general, operate by stimulating the living fibre. This proposition cannot, however, be received in an unlimited sense. From the exhibition of different medicines, very different effects are produced, which cannot be satisfactorily explained from the cause assigned,—the difference in the *degree* of stimulant operation. They differ in *kind* so far, that even in the greater number of cases, one remedy cannot by any management of dose or administration be made to produce the effects which result from the action of another.

It is therefore necessary to admit some modifications of the general principles above stated, and the following are perhaps sufficient to afford grounds for explaining the operations of remedies, and for establishing a classification of them sufficiently just and comprehensive.

I. Stimulants are not to be regarded as differing merely in the degree of stimulant operation which they exert. An important distinction exists between them, as they are more or less diffusible and permanent in their action. A stimulus is termed diffusible, which, whenever it is applied, or at least in a very short time after, extends

its action over the whole system, and quickly produces its full exciting effect. A diffusible stimulus is generally also transient in its action; in other words, the effect, though soon produced, quickly ceases. There are others, on the contrary, which, though equally powerful stimulants, are slow and permanent. These varieties, which are sufficiently established, serve to explain the differences in the powers of a number of the most important medicines; and they lay the foundation for the distinction of two great classes, narcotics and tonics, with their subordinate divisions of antispasmodics and astringents, both consisting of powerful stimulants; the one diffusible and transient, the other slow and permanent in their operation.

II. There is a difference between stimulants, in their actions being directed to particular parts. Some, when received into the stomach, quickly act upon the general system; others have their action confined to the stomach itself, or, at least, any farther stimulant effect they may occasion is slow and inconsiderable; while a third class consists of those which operate on one part, often without producing any sensible effect on the stomach or general system. Some thus act on the intestinal canal; others on the kidneys, bladder, vessels of the skin, and other parts; the affection they excite in these, being the consequence, not of any stimulant operation equally extended over every part, but of one more particularly determined. This difference in the action of stimuli is the principal foundation of the distinctions of medicines into particular classes. Cathartics, for instance, are those medicines, which, as stimuli, act peculiarly, on the intestinal canal: diuretics, those which act on the secreting vessels of the kidneys: emmenagogues, those which act on the uterine system; diaphoretics, those which exert a stimulant action on the vessels of the skin. With these operations, medicines, at the same time, act more or less as general stimulants, by which each individual belonging to any class is thus rendered capable of producing peculiar effects; and many of them, by a peculiarity of constitution in the patient, or from the mode in which they are administered, frequently act on more than one part of the system, by which their effects are still farther diversified. Medicines, when thus determined to particular parts, are sometimes conveyed to these parts in the course of the circulation; more generally their action is extended from the stomach, or part to which they are applied, by the medium of the nervous system.

III. Medicines, besides acting as stimuli, sometimes occasion mechanical or chemical changes in the state of the fluids or solids, by which their action is more or less diversified. These operations of medicines were formerly supposed to be more extensive than they really are; and many absurd explanations were deduced from the supposed changes which the solids and fluids underwent in disease. Though these notions are now exploded, it must still be admitted that changes of this kind take place in the living system. Chemical changes in particular, there is reason to believe, very frequently modify the actions of remedies; and some very obvious operations of this kind, as well as others of a mechanical nature, serve as distinctions for establishing several particular classes.

These observations point out the principles on which the arrange-

ment of the articles of the Materia Medica, from their medicinal operations, may be established.

Those stimulants which exert a general action on the system, may first be considered. Of these there are two well marked subdivisions, the diffusible and the permanent; the former corresponding to the usual classes of narcotics and antispasmodics; the latter, including likewise two classes, tonics and astringents. In these there is a gradual transition passing into the one from the other, from the most diffusible and least durable stimulus, to the one most slow and permanent in its action.

The next general division is that comprising local stimulants; such are the classes of emetics, cathartics, emmenagogues, diuretics, diaphoretics, expectorants, sialagogues, errhines, and epispastics. These all occasion evacuation of one kind or another, and their effects are in general to be ascribed, not to any operation exerted on the whole system, but to changes of action induced in particular parts.

After these, those few medicines may be considered whose action is merely mechanical or chemical. To the former belong diluents, demulcents, and emollients. Anthelmintics may perhaps be referred with propriety to the same division. To the latter, or those which act chemically, belong antacids or absorbents, lithontriptics, escharotics, and perhaps refrigerants.

Under these classes may be comprehended all those substances capable of producing salutary changes in the human system. Several classes are indeed excluded which have sometimes been admitted; but these have been rejected, either as not being sufficiently precise or comprehensive, or as being established only on erroneous theory.

The subdivisions of these classes may sometimes be established on the natural affinities existing among the substances arranged under each; on their chemical composition; their resemblance in sensible qualities; or, lastly, on distinctions in their medicinal virtues more minute than those which form the characters of the class. In different classes one of these methods will frequently be found preferable to any of the others.

TABLE OF CLASSIFICATION.

A. General stimulants.

- a. Diffusible.
  - Narcotics.
  - Antispasmodics.
- b. Permanent.
  - Tonics.
  - Astringents.

B. Local stimulants.

- Emetics.
- Cathartics
- Emmenagogues.
- Diuretics.
- Diaphoretics.
- Expectorants.
- Sialagogues.

C. Chemical remedies.

D. Mechanical remedies.

Errhines.
Epispastics.
Refrigerants.
Antacids.
Lithontriptics.
Escharotics.
Anthelmintics.
Demulcents.
Diluents.
Emollients.

CLASS I.—NARCOTICS.

This first division of the preceding classification, is that comprehending those stimulants, the action of which is general over the system. The first class of this division comprises those which are highly diffusible, and at the same time transient in their operation. This corresponds with the common class of narcotics or sedatives, usually defined. Such substances as diminish the action and powers of the system, without occasioning any sensible evacuation. The definition is imperfect, as it does not include that stimulant operation which it is acknowledged they equally produce.

When given in a moderate dose, narcotics excite the functions both of body and mind: the force and frequency of the pulse are increased, muscular action is more vigorous, and hilarity or intoxication are induced. These symptoms, after continuing for some time, are succeeded by those of diminished action: the pulse becomes slower, is full and soft, the body is less sensible to impressions, and less capable of voluntary exertion, and the mind is inactive. This state terminates in sleep. When it ceases, there remains a degree of general debility, marked by sickness, tremor, and oppression. By a large dose, debility, without previous exitement, is occasioned, and the consequences of an immoderate quantity are delirium, paralysis, coma, and convulsions, sometimes terminating in death. These are the general effects, considerably diversified, however, as arising from different narcotics, and varied by other circumstances. Habitual use considerably diminishes that power.

These medicines act primarily on the stomach, whence their action is conveyed by nervous communication to the general system. Externally applied, they exert their usual action, though with less force. Directly applied to the muscles of animals, they first stimulate them to contraction, but ultimately exhaust their irritability.

As the medicines belonging to this class diminish the actions of the system, when given even in small doses, their primary operation was generally considered as of a depressing kind: and the stimulant effects which occasionally appeared to be produced by their exhibition, were ascribed to what was termed the re-action of the system, or the exertion of that salutary power supposed to belong to the living body, by which every noxious application is resisted and thrown off. They were therefore considered as *directly* sedative, and *indirectly* stimulant.

Precisely the reverse of this doctrine was likewise advanced. As their exciting effects were those which appeared first, and were succeeded by those of debility, and as the first were produced from a small dose, while the others were occasioned when the dose was comparatively large, these substances were regarded as direct stimulants, capable of exciting the actions of the system; and the symptoms of debility which they so frequently produced, were considered as arising from that exhaustion of power, which, according to a general law of the system, always follows increased action suddenly raised and not kept up. They were regarded, therefore, as *directly* stimulant, and *indirectly* sedative, and the peculiarities of their action were ascribed to their rapid and transient stimulant operation.

If, in investigating this subject, we merely contrast these two theories, little doubt can remain of the superiority of the latter. The suppositions of there being a power in the living system, fitted to resist any noxious agent, and of such a power acting before the deleterious effects have taken place, and thus retarding or preventing their production, are improbable, and unsupported by any satisfactory proof. Since the stimulant operation of narcotics always precedes the symptoms of languor and debility which they produce; it is the direct conclusion, that these latter are the consequences of the former. The analogy between narcotics and other substances, admitted to be stimulants, but which are less rapid in their operation, is also in many respects so direct, as to prove similarity of action. And their utility in several diseases, in which they are employed as stimulants, is scarcely consistent with the opinion, that they possess a real depressing power. Some doubt, however, is still attached to the theory that they are direct stimulants, from the fact, undoubtedly true, that the sedative effects of narcotics are frequently disproportioned to their previous stimulant operation, allowing even in such cases, for its rapidity and little permanence; and the proposition, though apparently somewhat parodoxical, is perhaps just, that these substances are at once capable of stimulating the living fibre, and, independent of that stimulant operation, exhaust to a greater or less extent, by *direct* operation, the living power. The effects of certain chemical agents on the living system, as lately ascertained, appear to support some conclusion of this kind.

Narcotics being capable of producing either stimulant or sedative effects, may be practically employed with very different intentions. Either operation is obtained chiefly by certain modes of administration. If given in small doses, frequently repeated, the actions of the system are excited, and kept up. But if given in larger doses, at distant intervals, the state of diminished action and lessened sensiblity is obtained. As stimulants, they are employed in various diseases of debility: in intermittent fever, and continued fevers of the typhoid type; in gout, hysteria, &c. As sedatives, they are used to allay pain and irritation, to procure sleep, and diminish secretions; hence their applications in spasmodic and painful diseases, in hæmorrhagies and increased discharges. In an inflammatory state of the system, the use of some of them is not altogether without danger from their stimulating effects.

CLASS II.—ANTISPASMODICS.

This class might perhaps be considered as a subordinate division of narcotics. They have similar virtues, being used principally to allay pain and inordinate action, and they differ only in not producing that state of general insensibility and diminished action, which arises from the action of narcotics. This might be supposed owing merely to a difference in power; yet there seems also to be something more than this, since they produce no such effect in any dose, and since, although they are so much inferior to narcotics in this respect, they are equally powerful in repressing inordinate and irregular muscular action. This difference may be explained, on the supposition that they are equally powerful stimulants, but are less diffusible, and more durable in their action, or that they are powerful diffusible stimulants, possessing little direct power of diminishing the excitable principle. Considered in this point of view, they will form an intermediate class between narcotics and tonics; and experience shows, that they partake of the properties of both; several narcotics and tonics being frequently used as antispasmodics.

From the name given to this class, their effects may be easily understood. Spasm is an irregular contraction of a muscle; sometimes the contraction is permanent, at other times it alternates with relaxation, but is still irregular. Such medicines as obviate and remove such affections, are termed antispasmodics.

Spasm may arise from various causes. One of the most frequent, is a strong irritation continually applied; such as dentition or worms. In these cases, narcotics prove useful, by diminishing irritability and sensibility. Sometimes spasm arises from mere debility; and the obvious means of removing this is by the use of tonics. Both narcotics and tonics, therefore, are occasionally useful as antispasmodics, such as opium, camphor, and ether, in the one class, and iron, calomel, and Peruvian bark, in the other. But there are farther, several substances which cannot be with propriety referred to either of these classes, and to these the title of antispasmodics may be more exclusively appropriated.

CLASS III.—TONICS.

By tonics, are understood those substances whose primary operation is to give strength to the system. Their operation is not mechanical, as was once conceived; they act not on the simple solids, increasing their tenson or tone, but on the living fibre, and merely powerful stimulants, permanent in their operation. By producing a gradual excitement, they give vigor to the actions of the system, and as that excitement is gradually produced, it is in like manner gradually diminished, and the habitual stimuli continuing to operate, diminished action does not succeed. Where tonics, however, are given in excess, are used unnecessarily, or for too long a time, they weaken the powers of life.

Tonics act primarily on the stomach. the action they excite in

that organ being communicated generally by the medium of the nerves to the rest of the system. Some of them, however, are received into the mass of blood.

The immediate effects of a tonic, given in a full dose, are to increase the force of the circulation, to augment the animal heat, promote the various secretions, or moderate them when morbidly increased, quicken digestion, and render muscular action more easy and vigorous. By some of them, however, these effects are very slowly induced.

The affections of the system in which the tonics are employed, must be obviously those of debility; hence their use in the greater part of diseases to which mankind are subject.

This class may be subdivided into those individuals derived from the mineral, and those from the vegetable kingdoms.

TONICS FROM THE MINERAL KINGDOM.

These are in general more local in their nature than the vegetable tonics, they do not operate so speedily, and seldom occasion considerable excitement.

TONICS FROM THE VEGETABLE KINGDOM.

The tonic power in vegetables is intimately connected with certain sensible qualities, with their bitterness, astringency, and aromatic quality, all of them perhaps possessing these qualities, though, in each, one may be more predominant than the other. The purest bitters, astringents, and aromatics, possess also more or less of a tonic power. Of these divisions, the pure astringents form a distinct class; the remaining tonics may be arranged according as the bitterness or aromatic quality is predominant in them.

The stimulant operation of the purer bitters is little diffusible, and very slow in its operation; their effects are principally on the stomach and digestive organs, to which they communicate vigor, though they also act in some degree on the general system, and obviate debility, as is evident in particular from their efficacy in intermittent fevers, in dropsy, and gout, and from their debilitating effects when used for too long a time.

Aromatics are more rapid and diffusible in their action; they quicken the circulation, and augment the heat of the body. Their action has little permanence; hence, in medicine, they are employed either as mere temporary stimulants, or to promote the action of bitters or astringents.

From these different modes of action of bitters and aromatics, it is evident, that a more powerful tonic will be obtained from the combination of these qualities than where they exist separately. The most powerful tonics are accordingly natural combinations of this kind.

AROMATICS.

The substances belonging to this subdivision of the vegetable tonics, stimulate the stomach and general system, augment the force

of the circulation, and increase the heat of the body. They are scarcely sufficiently permanent in their action to be used by themselves, as tonics; but they always promote the action of bitters and astringents, and are used with advantage to obviate symptoms arising from debility of the stomach or intestinal canal. Their aromatic quality in general resides in an essential oil, which in each of them varies in flavor, pungency, and other sensible qualities, but which is nearly alike in its chemical properties. It is soluble entirely in alcohol, is sparingly soluble in water, and is extracted from them by distillation.

CLASS IV.—ASTRINGENTS.

Astringents have been usually considered as substances capable of obviating or removing increased evacuations, by their power of constringing or condensing the simple solids, of which the vessels are formed, and this by an action entirely chemical or mechanical, the same as that which they exert on dead animal matter.

Allowing, however, these substances to possess some power of this kind, their effects as remedies cannot be explained merely from its exertion. Increased evacuations cannot be ascribed to mere mechanical laxity of the solids; and their removal cannot be referred to simple condensation of these solids. Neither can it be admitted that active substances may be applied to the system without occasioning changes in the state of the living powers. Many substances, arranged as astringents occasion very considerable alterations in several of the functions; they produce effects too which cannot be solely referred to a condensing power, and therefore in all the changes they produce, part at least of their operation must be referred to their acting on the powers peculiar to life.

For reasons of this kind, some have denied the existence of such remedies, and have considered those which usually receive the appellation of astringents, merely as stimulants, moderate and permanent in their action; in other words, as *tonics* of inferior power. But though there be a great analogy between these two classes in their effects, and probably in their mode of operation, there is also a very obvious difference; the most powerful astringents, that is, substances which immediately restrain excessive evacuations, being much inferior in real tonic power to other substances having little astringency; while there are powerful tonics or medicines capable of removing debility, which do not with any uniformity produce the immediate effects of astringents.

Perhaps astringents may be regarded as moderate, permanent stimulants having their stimulant operation modified by their power of condensing the animal fibre by a mechanical, or rather a chemical action. That they exert a stimulant operation, is proved by their power of curing intermittent fever, and other diseases of debility; and that they possess a constringing quality is evdient, not only from the sensation they excite on the tongue, but is proved by the change they produce in animal matter. If these combined actions be exerted on the fibres of the stomach, the change produced, it is

possible, may be propagated by nervous communication to other parts of the system.

Some narcotics, as opium, have, in certain cases, effects apparently astringent. These are, where increased discharges arise from irritation, in which, by diminishing irritability, they lessen the discharge; but such an operation is altogether different from that of real astringents.

As remedies against disease, astringents may sometimes, from their moderate stimulant operation, be substituted for tonics. They have thus proved successful in the treatment of intermittent fever; and in all cases of debility, they seem to be serviceable, independent of their power of checking debilitating evacuations.

It is, however, for restraining morbid evacuations, that astringents are usually employed. In the various kinds of hæmorrhagy, &c. they are frequently employed with advantage, though their power is also often inadequate to stop the discharge. In diarrhœa they diminish the effusion of fluids, and at the same time give tone to the intestinal canal, and thus remove the disease. In the latter stage of dysentery they prove useful by a similar operation. In profuse sweating, and in diabetes, they are frequently sufficiently powerful to lessen the increased discharge; and in those kinds of inflammation termed passive, and even in certain cases of active inflammation they are applied with advantage as topical remedies.

It is an obvious caution, that astringents are not to be used to check critical evacuations, unless these proceed to excess.

Astringents may be subdivided into those belonging to the vegetable, and those belonging to the mineral kingdom, which differ very considerably from each other in their operation.

VEGETABLE ASTRINGENTS.

Astringency in vegetables seems to be connected with a certain chemical principle, or at least with some peculiarity of composition, since vegetable astringents uniformly possess certain chemical properties. The astringency is extracted both by water and alcohol, and these infusions strike a black color with any of the salts of iron, and are capable of corrugating more or less powerfully, dead animal matter.

Chemical investigations have accordingly discovered two distinct principles in the vegetable astringents, one or both of which may probably give rise to the astringent property. One of these, the Gallic acid, is distinguished by its property of striking a deep black color with the salts of iron: the other, the tanning principle, or tannin, is characterized by its strong attraction to animal gelatin, with which it combines, and forms a soft ductile mass, insoluble in water. These may be separated by a solution of animal jelly, which unites with the tannin, and leaves the gallic acid pure.

As both these principles exist in all the stronger vegetable astringents, it is probable that the corrugating property by which the action of these substances, as medicines, is modified, depends on their combination, especially as, in their action on dead matter, the

change produced on the animal fibre by the gallic acid, promotes the combination of that fibre with the tanning principle.

MINERAL ASTRINGENTS.

Of these, the principal are the mineral acids, especially the sulphuric, and the combinations it forms with some of the metals and earths.

LOCAL STIMULANTS.

CLASS V.—EMETICS.

EMETICS are substances capable of exciting vomiting, independent of any effect arising from the mere quantity of matter introduced into the stomach, or of any nauseous taste or flavor.

The effects of an emetic are, an uneasy sensation in the stomach, with nausea and vomiting. While the nausea only is present, the pulse is feeble, quick and irregular, and the countenance pale: during vomiting the face is flushed, the pulse is quicker, and it remains so during the intervals of vomiting. When the operation of vomiting has ceased, the nausea goes off gradually; the patient remains languid, and often inclined to sleep; the pulse is weak, but becomes gradually slow and full, and the skin is commonly moist.

The general nature of vomiting is sufficiently evident. The peristaltic motion of the stomach is inverted, the diaphragm and abdominal muscles are called into action by association, and the pylorus being contracted, the contents of the stomach are forcibly discharged. The peristaltic motion of the upper part of the intestinal canal is likewise frequently inverted.

How this peristaltic motion is thus inverted, it is difficult to explain. The substances which have this effect no doubt possess a stimulant power, but the effect is by no means produced in proportion to the degree of stimulant operation exerted on the stomach, and it has not been explained how such an operation can invert the usual motion.

Dr. Darwin considers vomiting as the effect, not of increased action from the operation of a stimulus, but of diminished action, arising from the disagreeable sensation of nausea. This being induced, the usual motion is gradually lessened, stopped, and is at length inverted, which gives rise to the phenomena of vomiting.

The susceptibility of vomiting is very different in different individuals, and is often considerably varied by disease.

Though nausea generally accompanies vomiting, this is scarcely a necessary connexion: some emetics acting without occasioning much nausea, while others induce it in a much greater degree than is proportioned to their emetic power.

The feeble and low pulse which accompanies vomiting, has been ascribed to direct association between the motions of the stomach and those of the heart, or it may be owing to the nausea excited, which being a disagreeable sensation, is equivalent to an abstraction of stimulus.

It is supposed also, that a sympathy exists between the stomach and the surface of the body, so that the state of the vessels of the one part is communicated to the vessels of the other. Hence vomiting is frequently followed by diaphoresis.

Emetics powerfully promote absorption.

They often occasion increased evacuation by the intestinal canal, more especially when they have been given in too small a dose to excite vomiting, an effect arising from their stimulating power.

Lastly, several of the effects of vomiting have been ascribed to the agitation of the body, and to the compression of the viscera, by the action of the diaphragm and abdominal muscles.

Emetics are employed in many diseases.

When any morbid affection depends upon, or is connected with over-distention of the stomach, or the presence of acrid indigestible matters, vomiting gives speedy relief. Hence its utility in impaired appetite; acidity in the stomach; in intoxication, and where poisons have been swallowed.

From the pressure of the abdominal viscera in vomiting, emetics have been considered as serviceable in jaundice arising from biliary calculi obstructing the hepatic ducts.

The expectorant power of emetics, and their utility in catarrh and phthisis, have been ascribed to a similar pressure extended to the thoracic viscera.

In the different varieties of febrile affections, much advantage is derived from exciting vomiting, especially in the very commencement of the disease. In high inflammatory fever, it is considered as dangerous; and in the advanced stage of typhus it is prejudicial.

Emetics given in such doses as only to excite nausea, have been found useful in restraining hæmorrhage.

Different species of dropsy have been cured by vomiting, from its having excited absorption. To the same effect, perhaps, is owing the dispersion of swelled testicle, bubo, and other swellings, which has occasionally resulted from this operation.

The operation of vomiting is dangerous or hurtful in the following cases: where there is determination of blood to the head, especially in plethoric habits; in visceral inflammation; in the advanced stage of pregnancy; in hernia, and prolapsus uteri, and wherever there exists extreme general debility.

The frequent use of emetics weakens the tone of the stomach.

An emetic should always be administered in the fluid form. Its operation may be promoted by drinking any tepid diluent or bitter infusion.

The individual emetics may be arranged under those derived from the vegetable, and those from the mineral kingdom.

CLASS VI.—CATHARTICS.

Cathartics are medicines which quicken or increase the evacuation from the intestines, or which, when given in a sufficient dose, excite purging. They evidently act by augmenting the natural peristaltic motion, from their stimulant operation on the moving fibres of the intestines, whence the contents of the canal are more quickly propelled. The greater number, or perhaps all of them, seem likewise to stimulate the extremities of the exhalent vessels terminating on the internal surface of the intestines, and hence the evacuations they occasion are not only more frequent, but thinner, and more copious.

Besides these immediate actions, the stimulant operation of cathartics appears to be more or less extended to neighboring organs, and hence they promote the secretion and discharge of the bile, and other fluids usually poured into the intestinal canal. It is also exerted on the stomach, so as to occasion a more quick evacuation of the contents of that organ by the pylorus.

Besides the differences between individual cathartics in quickness, slowness, or other circumstances attending their operation, there is a general difference in the mode in which they act, from which they may be, and usually have been ranked under two divisions. Some operate mildly, without exciting any general affection of the system, without even perceptibly stimulating the vessels of the intestines, and hence they merely evacuate the contents of the canal. Others are much more powerful stimulants: they always occasion an influx of fluids from the exhalant vessels, and neighboring secreting organs; they extend their stimulus to the system in general, and if taken in too large a dose, excite inflammation on the surface of the intestines. The former are distinguished by the title of laxatives; the latter are termed purgatives, and the stronger of them drastic purgatives.

Cathartics, as medicines, are capable of fulfilling various indications.

Where there exists a morbid retention of the contents of the stomach, where these contents are acrid, or where extraneous bodies are present, they are calculated by their evacuating power to relieve the symptoms arising from these affections, and hence their utility, in constipation, cholic, dysentery, and a variety of febrile affections. Partly by exciting the intestines to action, and partly by extending their stimulus to the other abdominal viscera, cathartics are of service in dypepsia, hypochondriasis, amenorhœa, jaundice, and visceral obstructions.

By their power of stimulating the exhalent vessels, on the internal surface of the intestinal canal, and causing a larger portion of fluid to be poured out, cathartics are capable of producing a diminution of the fluids with respect to the general system, and of course cause an abstraction of stimulus. Hence purging is a principal part of what is termed the antiphlogistic regimen, and is employed as a remedy of much power in highly inflammatory diseases.

From the same power of causing effusion of fluid, is to be ex-

plained the utility of cathartics in the various species of dropsy. A balance is preserved in the system between exhalation and absorption, so that when one is increased, the other is so also. The increased secretion and discharge of serous fluid, which cathartics occasion, causes an increased absorption; whence the affused fluid in dropsy is frequently taken up and removed.

Partly by the serous evacuation which cathartics occasion, and partly by the derivation of blood they make from the head, they are highly useful in the prevention and cure of apoplexy, all comatose affections, mania, phrenitis, and headach.

The administration of cathartics is rendered improper by inflammation of the stomach or intestines, or tendency to it, and by much debility. Several cautions are likewise requisite in their exhibition. The nausea or griping they frequently produce, may be obviated by the addition of an aromatic, or by giving them in divided doses — The more powerful cathartics should always be given in the latter mode; and in general they irritate less when given diffused in a fluid than when given in a solid form.

The different cathartics may be considered under the two divisions of laxatives and purgatives: the former being mild in their operation, and merely evacuating the contents of the intestines; the latter being more powerful, and extend their stimulant operation to the neighboring parts.

A division of cathartics remains, intermediate in their operation between the laxatives and purgatives, more powerful than the one, less violent and stimulating than the other. These are the neutral salts. They seem to act principally by stimulating the exhalant vessels on the inner surface of the intestines; and by the watery evacuation they occasion, are particularly adapted to those cases where inflammatory action or tendency to it exists.

CLASS VII.—EMMENAGOGUES.

The medicines arranged under this class are those capable of promoting the menstrual discharge.

As the suppression of this discharge is usually owing to debility of the uterine vessels, or want of action in them, the medicines capable of exciting it must be those which can stimulate these vessels.

General stimulants or tonics must have this effect to a certain extent, and there are several stimulants both diffusible and permanent, employed as Emmenagogues.

It is doubtful, whether there are any other medicines, which have their stimulant operation particularly determined to the uterine vessels. There are several, however, which, acting on neighboring parts, have their action extended to the uterus, and hence exert an emmenagogue power greater than can be ascribed to any general stimulant operation they exert on the system. Several cathartics act in this manner.

Under one or other of these divisions, may be arranged the principal medicines employed as emmenagogues.

CLASS VIII.—DIURETICS.

Diuretics are those medicines which increase the urinary discharge.

It is obvious that such an effect will be produced by any substance capable of stimulating the secreting vessels of the kidneys. All the saline diuretics seem to act in this manner. They are received into the circulation, and, passing off with the urine, stimulate the vessels, and increase the quantity secreted.

There are other diuretics, the effect of which appears not to arise from direct application, but from an action excited in the stomach, and propagated by nervous communication to the secreting urinary vessels. The diuretic operation of squill, and of several other vegetables, appears to be of this kind.

There is still, perhaps, another mode in which certain substances produce a diuretic effect, that is by promoting absorption. When a large quantity of watery fluid is introduced into the circulating mass, it stimulates the secreting vessels of the kidneys, and is carried off by the urine. If, therefore, absorption be promoted, and if a portion of serous fluid, perhaps previously effused, be taken up, the quantity of fluid secreted by the kidneys will be increased. In this way digitalis seems to act: its diuretic effect, it has been said, is greater when exhibited in dropsy than it is in health.

The action of these remedies is promoted by drinking freely of mild diluents. It is also influenced by the state of the surface of the body. If external heat be applied, diuresis is frequently prevented, and diaphoresis produced. Hence the doses of them should be given in the course of the day, and the patient if possible be kept out of bed.

The direct effects of diuretics are sufficiently evident. They discharge the watery part of the blood; and by that discharge they indirectly promote absorption over the whole system.

Dropsy is the disease in which they are principally employed, and when they can be brought to act, the disease is removed, with less injury to the patient than it can be by exciting any other evacuation. Their success is very precarious, the most powerful often failing; and as the disease is so frequently connected with organic affection, even the removal of the effused fluid, when it takes place, only palliates without effecting a cure.

Diuretics have been likewise occasionally used in calculous affections, in gonorrhœa, and with the view of diminishing plethora, or checking profuse perspiration.

CLASS IX.—DIAPHORETICS.

Diaphoretics are those medicines which increase the natural exhalation by the skin. When this is carried so far as to be condensed on the surface, it forms sweat; and the medicines producing it are named sudorifics. Between diaphoretics and sudorifics, there is no

distinction; the operation is in both cases the same, and differs only in degree from augmentation of dose, or employment of assistant means.

Since diaphoresis or sweat is merely the increase of the natural exhalation, it must arise from increased action of the cutaneous exhalant vessels, and the medicines belonging to this class must be those which are capable of exciting that action.

Of stimulants capable of producing this effect, the application of heat to the surface affords an example. It is one of the most effectual, and is always employed to promote the action of sudorifics.

The same effect may be produced indirectly, by increasing the general force of the circulation, which acts as a stimulus on the exhalant vessels, and increases their discharge

By one or other of these modes of operation, the medicines classed as diaphoretics seem to act.

The saline diaphoretics, as they do not sensibly augment the force of the circulation, probably act in the former manner, exerting a particular action on the stomach, which is communicated to the vessels of the skin, or perhaps being received into the blood, and directly applied to these vessels.

Those diaphoretics, on the contrary, which are termed heating, as the aromatic oils and resins, act by directly stimulating the heart and arteries, and increasing the force of the circulation.

Diaphoresis is not, however, the necessary consequence of the circulation being increased; for the surface often remains dry, where the pulse is frequent and strong. In this case, a morbid constriction of the cutaneous vessels exists, which opposes a resistance to the impetus of the blood. Whatever, therefore relaxes these vessels, will favor the production of sweating; and to this mode of operation probably is to be ascribed the diaphoresis produced by antimonial preparations, or by ipecacucan, and in part the advantage derived from the use of warm diluents in promoting sweat. When these circumstances, the increase of the force of the circulation and the relaxation, of the cutaneous vessels, are conjoined, the sweating will be still more copious; and from this probably arises the superiority of the combination of opium with antimony or ipecacuan, to any other sudorific.

The primary effects of diaphoretics, are to evacuate the watery part of the blood, and thus lessen the quantity of fluid in the circulating system; to determine the blood to the surface; to increase the action of the absorbents, and to remove spasmodic constriction of the cutaneous vessels, and render the skin moist.

The first of these effects probably takes place to no great degree, as the free use of diluents makes part of the sweating regimen.

The last effect, the changing the state of the vessels on the skin, is the most important, considered in a practical point of view, that diaphoretics produce, as on this their efficacy in fever, in which principally they are employed, depend.

CLASS. X.—EXPECTORANTS.

Expectorants have been defined, those medicines which facilitate or promote the rejection of mucus or other fluids from the lungs and windpipe. The theory of their operation is very imperfectly understood. It has been supposed that where a greater quantity of fluid is thrown out into the lungs than the exhalants can take up, there are remedies which may facilitate its rejection. But as expectoration is an operation partly voluntary, and dependant on the action of a number of muscles, it is difficult to discover how such an effect can be produced. If by expectorants, be meant substances capable of producing it by some specific action on the parts concerned, there seems no reason to believe in the existence of such remedies.

Dr. Cullen supposed that expectorants might act by promoting the exhalation of a thin fluid, which diluting the viscid mucus present in the mucus follicles in the lungs and windpipe, might facilitate its rejection. But the action of the different individuals belonging to the class, and especially their effects in various diseases, cannot be explained on this principle.

There are probably various modes of operation by which certain remedies will appear to promote expectoration, and which will give them a claim to the title of expectorants.

Thus, in certain diseases the exhalant vessels in the lungs, seem to be in that state, by which the exhalation of fluid is lessened, or nearly stopped, and in such cases expectoration must be diminished. Any medicine capable of removing that constricted state, will appear to promote expectoration, and will at least relieve some of the symptoms of the disease. It is apparently by such a mode of operation, that antimony, ipecacuan, squill, and some others, promote expectoration in pneumonia, catarrh, and asthma, the principal diseases in which expectorants are employed.

There is a case of an opposite kind, that in which there is a redundancy of mucus in the lungs, as occurs in humoral asthma. In these affections, certain expectorants are supposed to prove useful. If they do so, it is probably by being determined more particularly in their action to the pulmonary vessels, and by their moderate stimulus diminishing the secretion, or increasing the absorption, thus lessening the quantity of fluid, and thereby rendering the expectoration of the remainder more easy. The determination of these substances to the lungs is often perceptible by their odour in the air expired. A similar diminution of fluid in the lungs may be effected by determining to the surface of the body, and those expectorants which belong to the class of diaphoretics probably act in this manner.

Expectorants, then, are to be regarded, not as medicines, which directly assist the rejection of a fluid already secreted, but rather as either increasing the natural exhalation where it is deficient or diminishing the quantity of fluid where it is too copious, either by stimulating the pulmonary vessels, or by determining to the surface. In both cases expectoration will appear to be promoted or facilitated.

Inflammation of the lungs, catarrh and asthma, are the principal diseases in which expectorants are employed; and the mode in which they prove useful will be apparent from what has been said of their operation.

CLASS XI.—SIALAGOGUES.

Sialagogues are substances which increase the quantity of the salivary discharge. This may be effected by the mastication of certain acrid substances, or by the internal exhibition of certain medicines.

Of those which act in the latter mode, *mercury* and *blue flag* are the only ones that uniformly produce this effect. No satisfactory explanation has been given of this peculiar power which they exert; and the inquiry why this should be particularly directed to the salivary glands, appears as fruitless as that into the specific virtue of any medicine. They do not from their sialagogue power appear to be of advantage in the treatment of any disease; salivation being only a test of their action on the system, but not in itself of any utility.

The remaining sialagogues are those which act merely by topical application, by mastication, and from their acrid stimulating quality. By increasing the salivary discharge, they have been found of service in toothach, and, as has been supposed, in some kinds of headach.

CLASS XII.—ERRHINES.

Errhines are medicines which occasion a discharge from the nostrils, either of a mucous or serous fluid. They all operate by direct application, and generally in consequence of a greater or less degree of acrimony which they possess. Their practical uses, it is evident, must be very limited. By the evacuation they occasion, it is supposed that they may diminish the quantity of fluid in the neighboring vessels; and that they hence may prove useful in rheumatic affections of these parts, in headach, pain of the ear, and ophthalmia. They are sometimes used with advantage in some of these affections. It has likewise been imagined that they may be of use in preventing apoplexy.

CLASS XIII.—EPISPASTICS AND RUBEFACIENTS.

These, as they operate on the same principles, and produce the same effects only in different degrees, may be considered merely as subdivisions of one class.

EPISPASTICS.

Epispastics are those substances which are capable, when applied to the surface of the body, of producing a serous or puriform discharge, by exciting a previous state of inflammation. The term,

though comprehending likewise issues and setons, is more commonly restricted to blisters,—those applications which, exciting inflammation on the skin, occasion a thin serous fluid to be poured from the exhalents, raise the cuticle, and form the appearance of a vesicle. This effect arises from their strong stimulating power, and to this stimulant operation, and the pain they excite, are to be ascribed the advantages derived from them in the treatment of disease. The evacuation they occasion is too inconsiderable to have any effect.

It is a principle sufficiently established with regard to the living system, that where a morbid action exists; it may often be removed by inducing an action of a different kind in the same or in a neighboring part. On this principle is explained the utility of blisters in local inflammation and spasmodic action, and it regulates their application in inflammations of the lungs, stomach, liver, brain, and throat, rheumatism, colic, and spasmodic affections of the stomach; diseases in which they are employed with the most marked advantage.

A similar principle exists with respect to pain; exciting one pain often relieves another. Hence blisters often give relief in toothach, and some other painful affections.

Lastly, blisters, by their operation, communicate a stimulus to the whole system, and raise the vigor of the circulation. Hence, in part, their utility in fevers of the typhoid kind, though in such cases they are used with still more advantage to obviate or remove local inflammation.

RUBEFACIENTS.

Rubefacients excite pain and inflammation, but in a less degree than blisters, so that no fluid is discharged They stimulate the system in general, and obviate local inflammation, and are used for nearly the same purposes as blisters.

Any stimulating application may be used for this purpose.

Cantharides added in a small proportion to a plaster, or the tincture of cantharides applied by friction to a part, is often employed as a rubefacient.

Ammonia mixed with one, two, or three parts of expressed oil, forms a liniment frequently used for this purpose in rheumatism, angina, and other cases of local inflammation.

REMEDIES ACTING CHEMICALLY.

CLASS XIV.—REFRIGERANTS.

The remedies comprised under this class have been usualy defined, substances which directly diminish the force of the circulation, and reduce the heat of the body, without occasioning any diminution of sensibility or nervous energy.

All acids are supposed to be refrigerants; but the vegetable acids are allowed to possess this power in a more eminent degree.

The native vegetable acids are found chiefly in the fruits of vegetables. The sour juice of these fruits consists either of the citric or malic acids, or more frequently of a mixture of both. The citric acid is that which is most largely employed, as it forms chiefly the acid juice of the orange and lemon, the two acid fruits in common medicinal use.

CLASS XV.—ANTACIDS.

Antacids are remedies which obviate acidity in the stomach. Their action is purely chemical, as they merely combine with the acid present, and neutralize it. They are only palliatives, the generation of acidity being to be prevented by restoring the tone of the stomach, and its vessels. Dyspepsia and diarrhœa are the diseases in which they are employed.

CLASS XVI.—LITHONTRIPTICS.

Lithontriptics are medicines supposed to be capable of dissolving urinary calculi. Their operation is entirely chemical.

The researches of modern chemists have proved, that these calculi, in general, consist principally of a peculiar animal acid, named the lithic or uric acid. With this substance the alkalies are capable of uniting, and of forming a soluble compound.

From the exhibition of alkaline remedies, the symptoms arising from a stone in the bladder are very generally alleviated; and they can be given to such an extent, that the urine becomes sensibly alkaline, and is even capable of exerting a solvent power on these concretions. Their administration cannot, however, be continued to this extent for any considerable length of time, from the strong irritation they produce on the stomach and urinary organs. The use, therefore, of the alkalies as solvents, or lithontriptics, is now scarcely ever attempted; they are employed merely to prevent the increase of the concretions, and to palliate the painful symptoms, which they do, apparently by preventing the generation of lithic acid, or the separation of it by the kidneys; the urine is thus rendered less irritating, and the surface of the calculus is allowed to become smooth.

CLASS XVII.—ESCHAROTICS.

Escharotics are substances capable of dissolving animal matter; applied to the skin, they erode it, and to an ulcer, they remove its surface. They are employed to consume excresences, to open an ulcer, and to change the diseased surface of a sore already existing. Their action is entirely chemical.

REMEDIES ACTING MECHANICALLY.

CLASS XVIII.—ANTHELMINTICS.

Anthelmintics are those medicines used to expel worms from the intestinal canal. The greater number of them act mechanically, dislodging the worms, by the sharpness or roughness of their particles, or by their cathartic operation. Some seem to have no other qualities than those of powerful bitters, by which they either prove noxious to these animals, or remove that debility of the digestive organs by which the food is not properly assimilated, or the secreted fluids poured into the intestines are not properly prepared; circumstances from which it has been supposed the generation of worms may arise.

CLASS XIX.—DEMULCENTS.

Demulcents are defined, "Medicines suited to obviate and prevent the action of acrid and stimulant matters, and that, not by correcting or changing their acrimony, but by involving it in a mild and viscid matter, which prevents it from acting upon the sensible parts of our bodies," or by covering the surface exposed to their action.

Where these substances are directly applied to the parts affected, it is easy to perceive how benefit may be derived from their application. But where they are received by the medium of the stomach into the circulating system, it has been supposed that they can be of no utility, as they must lose that viscidity on which their lubricating quality depends. Hence it has been concluded, that they can be of no service in gonorrhœa, and some similar affections. It is certain, however, that many substances which undergo the process of digestion are afterwards separated in their entire state from the blood, by particular secreting organs, especially by the kidneys; and it is possible that mucilaginous substances, which are the principal demulcents, may be separated in this manner. There can be no doubt, however, but that a great share of the relief demulcents afford in irritation or inflammation of the urinary passages, is owing to the large quantity of water in which they are diffused, by which the urine is rendered less stimulating from dilution. In general, demulcents may be considered merely as substances less stimulating than the fluids usually applied.

Catarrh, diarrhœa, dysentery, calculus, and gonorrhœa, are the diseases in which demulcents are employed. As they are medicines of no great power, they may be taken in as large quantities as the stomach can bear.

The particular demulcents may be reduced to the two subdivisions of mucilages and expressed oils.

CLASS XX.—DILUENTS.

Diluents are defined, those substances which increase the proportion of fluid in the blood. It is evident that this must be done by watery liquors. Water is indeed, properly speaking, the only diluent. Various additions are made to it, to render it pleasant, and frequently to give it a slightly demulcent quality. But these are not sufficiently important to require to be noticed, or to be classed as medicines.

Diluents are merely secondary remedies. They are given in acute inflammatory diseases, to lessen the stimulant quality of the blood. They are used to promote the action of diuretics in dropsy, and to favor the operation of sweating.

CLASS XXI.—EMOLLIENTS.

Emollients are those medicines which diminish the force of cohesion in the particles of the solid matter of the human body, and thereby render them more lax and flexible. Their operation is mechanical; they are insinuated into the matter of the solid fibre, and lessen the friction between its particles. They are useful when the fibres are rigid, or when they are much extended, and therefore afford relief when topically applied to inflamed parts, to tumors distending the skin, or where the skin is dry and rigid.

Heat conjoined with moisture is the principal emollient; and water applied warm by the medium of some vegetable substances, constituting the various fomentations and cataplasms, is the form under which it is applied, the vegetable matter serving to retain the heat, and to allow the proper application of the moisture.

Oils and unctuous substances are the only other emollients; they are merely introduced by friction. Any of the expressed oils already noticed, or lard, may be used for this purpose.

The preceding observations are inserted to give a general idea of the virtues of such medicinal substances as are possessed of the qualities which make the objects of the respective articles. I shall now proceed to an account of each of the remedies separately; commencing with botanical, or vegetable medicines, which will receive more particular attention; they being more in accordance with the objects of this work. Together with native plants, such foreign medicines will be described as are serviceable and in common use.

MEDICINAL PLANTS.

Adder's Tongue.—*Erythronium Lanceolatum.*

This small herb has but one leaf, which grows with the stalk a finger's length above the ground, being flat and of a fresh green color, broad, like water plantain, but without any middle rib in it. From the bottom of the leaf there arises one, and sometimes two or three small slender stalks, the upper half of which are larger, serrated, and of a yellowish green color, like the tongue of an adder. It grows in low, moist places, appearing early in the spring. Roots perrennial.

The expressed juice of the plant infused in wine or cider, is said to relieve dropsies. It is also a good remedy for wounds in the breasts, or bowels, and stays hiccupping, vomiting, hemorrhage; allays inflammations, and forms a good healing application for wounds.

Agrimony.—*Agrimonia.* The herb and root.

This plant rises two or three feet in height; branching towards the top, bearing yellow flowers, succeeded by a small burr, which will stick to the clothes; its leaves alternate, growing on a stem having five or six pairs, and an odd one at the end. It grows in cultivated fields, by the road sides, and in woods; blooms in July and August, and is sometimes known by the names of cockle-burr, stickwort, &c.

It is a mild astringent, corroborant, and tonic, and therefore given for a lax tone of the bowels and solids. Taken in the form of a tea of both root and herb, for a long time, it will almost invariably cure the scrofula. Useful, also, in coughs, obstructed menses, bowel complaints, gravel, asthma, and cutaneous diseases. The best way to take it is in a strong decoction, sweetened with honey.

Angelica. *Angelica Sylvestris.* The root.

This plant grows from two to four feet high, having large round hollow stalks, with small joints at a considerable distance from each other: leaves on large stems, flowers white, umbelliferous, seeds resembling parsnip, ripe in August, and have a pungent aromatic taste; the root biennial, long and thick, hung with many fibres. It grows spontaneously in intervales, and rich places by the side of streams.

This root is an excellent aromatic, carminative, emmenagogue, discutient, and sialagogue. Alone, or combined with tonics, it is excellent in flatulency, or wind colic, pain in the stomach, debility, &c. The fresh root, bruised and laid on inflammatory tumors, disperses them. Steeped in vinegar, and drank, or the root chewed, it is an infallible preservative against epidemics or infection. It raises

the spirits, strengthens the stomach, and causes an appetite. It may be taken in powder, a tea spoonful at a dose, or the seeds and roots may be steeped gently in water, or infused in spirits.

BLACK ALDER. *Prunos Verticillatus.* The bark and berries.

This is a very common shrub in many parts of the United States and grows in the greatest perfection in swamps and marshy places. The outer bark is of a blackish color, but the inner is yellow, and being chewed, turns the spittle to a saffron color. The berries are of a fine red color, and may be seen in the winter.

The bark is astringent, and is likewise considerably bitter and pungent. It has been used as a substitute for the Peruvian bark, in intermittents and other diseases, both in substance and decoction. It is chiefly useful as a tonic and corroborant, in cases of great debility, and in dropsies and incipient gangrene. It is both given internally, and used externally as a wash. The berries, infused in wine or brandy, make an excellent bitter tincture, and preservative against worms.

Care should be taken to distinguish the black alder from the swamp alder or tag alder.

A decoction of the bark and berries, drank continually, is a valuable remedy for the bleeding piles.

SWAMP OR TAG ALDER. *Alnus Rotundifolia.* The bark.

This is a swamp tree, growing from ten to twenty feet high, and receives its name from the tags with which it is covered during the winter.

In decoction, or in beer, it is used very frequently as a detergent, and alterative to the blood. An ointment made from it, is good in burns and inflammation.

ALEXANDER, OR WILD PARSLEY. *Petroselinum.* The seeds.

This is a biennial plant, root long and very thick, smell strong, sharp acrid taste, leaves doubly compound, numerous, and proceed immediately from the root. The main leaf stalk is divided into three principal branches, and each of these subdivided into three others, which support a number of short, oval, serrated leaves; its stem is firm, upright, and scored on the surface, and grows from four to six feet high; the seeds are shaped like a crescent. It grows in low meadows, flowers in July, and the seed is ripe in September.

The seed only is used in medicine, and is a warm and powerful diuretic. It may be combined with marsh mallows in decoction, in proportion of four ounces of the seeds to two ounces of marshmallows, boiled to three quarts, and sweetened with honey, a tea-cup full for a dose. It is warming to a cold stomach, and removes obstructions of the liver and spleen.

Aloes, Socotorinie and Hepatic. The gum resin.

A perrennial plant, consisting of many varieties, which grow in the south of Europe, Asia, Africa and America. The *Socotornic* is considered the purest, and is brought from the island of Socotra, wrapped in skins. It is in small pieces of a reddish brown color, with a purplish cast, when reduced to powder, of a bright golden shade. Its taste is bitter, accompanied with an aromatic flavor; the smell is not unpleasant, and slightly resembles that of myrrh. The *Barbadoes* aloes is in large masses, of a lighter color, and has an odor much stronger and more unpleasant than the former. The *Hepatic* is of a similar kind. The horse aloes is still more impure, and is weaker in its power.

Aloes is a warm, stimulating purgative, and considerably vermifuge. Its medium dose is from five to fifteen grains, nor does a larger quantity operate more effectually. Taken in doses of a few grains, mixed into pills with soap, it acts as a gently stimulating laxative.

Aniseed. *Pimpinella Anisum.*

Anise is an annual plant, growing naturally in Crete and Syria. The seeds have an aromatic odor, and a warm taste, with a share of sweetness. An essential oil is obtained from it. It is a good carminative in dyspepsia, and in the flatulence to which children are subject. A drachm or two of the seeds is a dose, or a few drops of oil dropped on sugar.

Archangel. The herb and flower.

Also called, dead nettle; there are three kinds: red, white, and yellow archangel, but similar in virtues. Each have several square stalks, hairy at the joints, with two green serrated leaves opposite each other at the lower joints, upon long foot stalks, but without any toward the tops, which are somewhat round, yet pointed, crumpled and hairy; round the upper joints, embedded in leaves, are gaping flowers of a pale red color, or white or yellow, as the case may be. The root is small and thready, and annual: the plant has a strong, but not stinking scent.

The herb infused in wine, is stimulating, detergent, and a preservative against fevers and particularly the ague. The flowers are useful in restraining the whites in women. Applied externally, it is discutient to indolent tumors, and cleansing to filthy ulcers.

Arse-Smart. The herb.

This valuable remedy grows in our country every where, though few know the great use of it. It is a powerful antiseptic, and allays inflammation, discusses cold swellings, particularly such as affect the

knee joint, and dissolves congealed blood in bruises, blows, &c. For these purposes, it should be applied in strong decoction and poultice. The juice destroys worms in the ears, when dropped into them.

Arse-smart may be drank in decoction without any ill effects. It has been used in gravel and other obstructions of urine with great benefit: for curing coughs and colds it is remarkably efficacious. It has also been used as a vermifuge. The piles may be cured by this herb, taken internally and applied externally.

Asarabacca. *Asarum Americanum.* The leaves and root.

Called also wild ginger, cat's foot, Canada snake root, coltfoot, &c. This is a humble stemless plant, the leaves rise immediately from the root, and are usually two in number, resembling a colt's foot. The flowers proceed from between these leaves, and are large, purple and bell-shaped. The root is fibrous, of a grey brown color externally, but white within. It grows throughout the United States, in shady woods and rich soil. Both the root and leaves have a nauseous, bitter, acrimonious, hot taste.

American asarabacca is aromatic, stimulant and diaphoretic, cordial emmenagogue, tonic, errhine, &c. but not properly emetic, like the European species, though a large dose will operate both as an emetic and cathartic. It is useful in debility, melancholy, palpitations, low fevers, convalesence, obstructions, hooping-cough, &c. The doses must be small and often repeated, since it becomes nauseous in larger doses. It may be given in decoction, or in cordial.

The principal use of this plant, among modern practitioners, is as a sternutatory, being one of the strongest of all vegetable errhines, and very useful in all disorders of the head and eyes. Snuffed up the nose, in quantity of a grain or two, it causes a large evacuation of mucus.

Indian Arrow Root. The root.

This root is imported from the West Indies, and has been much used as a diet for sick people. It is nutritious and mucilaginous, and good in bowel complaints; but is more an article of luxury than of necessity, and its place may be supplied nearer home.

Assafœtida. The gum resin.

The plant which furnishes assafœtida is a native of Persia. The gum is procured from the roots, and comes in large irregular masses, composed of little shining lumps or grains, which are partly of a whitish color, and partly reddish and violet. Those masses are accounted best, which are clear, of a pale reddish color, and variegated with a great number of elegant white tears. The drug has a strong fœtid smell, somewhat like that of garlic; and a bitter, acrid, biting taste. It is the most powerful of all the fœtid gums, and is a

valuable remedy. It acts as a stimulant, antispasmodic, expectorant, emmenagogue, and vermifuge. Its action is quick and penetrating, and it affords great relief in spasmodic, flatulent, hysteric, or hypochondriacal complaints, especially when they arise from obstructions of the bowels. It is given in the form of pills, in doses of from five to twenty grains, alone, or combined with bitter purgatives or extracts; or it may be given in tincture, or dissolved in water. In the form of a clyster, two or three drachms may be given.

Avens. *Geum Virginianum.* The root.

Also called Evan's root, chocolate root, cureall, &c. This plant rises about two feet high, root fibrous, very pleasant and aromatic; leaves large and lyre-shaped, stalk upright, flowers white or yellow, and terminal. It is a perrennial plant, and grows uncultivated throughout the United States. The roots have the flavor of cloves, with a bitterish astringent taste. The large roots are preferable to the fibrous ones, which should be dug in April, cut in thin slices, and dried in the air as quick as possible: then pulverize, and bottle it up for use.

Aven's root is a noble medicine in all cases of beginning consumptions and debility. There are several species of avens, but they all possess similar qualities, viz. astringent, styptic, tonic, febrifuge, stomachic, &c. It is preferable to the Peruvian bark in the cure of intermittents, dysentery, chronic diarrhœas, wind colic, affections of the stomach, asthmatic symptoms, and cases of debility; whites, flooding, sore throat. The continual use of it has restored to health the most shattered and enfeebled constitutions, and is probably as effectual as any one single article in arresting a consumption. In a fever, after proper evacuations, it may be given till the fever is broke. The doses are daily, a pint of a weak decoction, or about sixty grains of the powder, divided into three doses, and mixed with honey.—This root has formed a principal ingredient in the popular Indian chocolate, for consumption.

Backach Brake. *Polypody silex.* The root.

Also called female fern. There are two kinds of fern, or brake, namely the male and female: their qualities are similar. The female fern is of the fan specie, grows higher than the male, though the leaves are less, and more divided. The same species, or another, I know not which, grows in swamps, and is that used more particularly in facilitating the delivery of women. The root is about the size of a goosequill, lying horizontal, of a brown color, very sweet, and of a mucilaginous taste. It grows plentifully in low, moist pastures, in swamps, or near ponds.

The root is a good pectoral and demulcent. Made into decoction, with a little spirits added, it forms an excellent preparatory medicine for the delivery of females, softening, relaxing, and rendering the

operation much easier. It should be taken for a few days previous to the expected time. An excellent syrup for coughs may be made from it by boiling it to a decoction and adding honey. This should be taken continually.

The following liquor has cured a most inveterate backach, or lumbago: Boil one pound of the fresh roots of the brake, and one ounce of sumack root bark, cut small, in two quarts of rum till it becomes slimy. Dip brown paper in this liquid, and bind it across the back, after taking a laxative, repeating the application every hour till well. Rub the spine and sacred bone with a piece of flannel dipped in the liquid for ten minutes before you apply the paper. The same application together with a decoction of the brake internally, is very serviceable in the rickets.

Balm. *Melissa Officinalis.* The leaves.

The stem rises about three feet in height, leaves egg-shaped, and of a bright green color, flowers white, perrennial; grows wild in low meadows, wet grounds, and in gardens, throughout the United States; has a pleasent smell, and an aromatic taste. It is well known.

It has been found beneficial for a common drink in inflammatory fevers and pleurisies, as a diluent and diaphoretic, removing obstructions and equalizing the circulation. It is a pleasant, cooling drink, promotes perspiration, and allays thirst; lemon juice may be added.

Balsam of Fir. *Pinus Balsamea.*

The liquid resin, called balsam of Canada. It exudes spontaneously from the trunk of the fir tree; is of a light yellow colour, tenacious and inflammable. By keeping, it becomes thicker. The medicinal virtues of this balsam seem to be the same as those of copaiva, and is used for the same purposes. Its dose is from thirty to fifty drops. It is soluble in alcohol and oils, and affords an essential oil by distillation.

Balsam Copaiva.

The tree which produces the balsam copaiva is a native of the Spanish West Indies, and of some part of the continent of South America. It grows to a large size, and the resinous juice flows in considerable quantities from incisions made in the trunk. It is thick, tenacious, with, a yellowish tinge, has a peculiar smell, and a pungent bitter taste.

Balsam copaiva increases the urinary discharge, and communicates to the urine a violet odor; in too large a dose it excites inflammation of the urinary passages. From its power of stimulating the parts it frequently proves successful in the cure of gleet and the whites. It is a useful corroborant and detergent. It strengthens the nervous system, tends to loosen the bowels, promotes urine, and

cleanses and heals exulcerations in the urinary passages. It is recommended in coughs and diseases of the breast and lungs. The dose should not exceed from twenty to thirty drops twice or three times a day. It may be taken on sugar or mixed with gum arabic.

Balsam of Tolu.

This tree grows in Spanish America, and the balsam is obtained by incision, during the hot season. It is of a yellowish brown color, inclining to red. This is the mildest of all the balsams. It has been esteemed as an expectorant, but its powers are very inconsiderable, and it is employed principally on account of its flavor. It possesses, however, all the virtues of the other balsams, and is more fragrant than the most of them.

Balsam of Peru.

This tree grows in the warmest provinces of South America, and is remarkable for its elegant appearance. Every part of it abounds with resinous juice. Balsam of Peru is a very warm aromatic medicine, considerably hotter and more acrid than copaiva. Its principal effects are to warm the habit, strengthen the nervous system, and attenuate viscid humors. Hence its use in some kinds of asthmas, gonorrhœas, dysenteries, suppressions of the menses, and other disorders proceeding from debility of the solids. It is also employed externally for cleansing and healing wounds and ulcers. Two drachms in twenty-four hours is a sufficient dose.

Balm of Gilead.

The buds of this tree, in tincture, are very healing for internal ulcerations, and remove pains and other affections of the stomach and chest. Its virtues, however, are similar to those of other balsams. It was anciently obtained from a tree near Mecca, and was so highly prized as to be used only by princes. The pure balsam never reaches this country; it is adulterated and of an inferior quality, and of little medical account. The balm of gilead that has been transplanted to America is supposed not to be the genuine tree of the Arabians.

Barbadoes Tar, or Rock Oil. *Petroleum.*

Rock oil is a bitumen of a red color, and thick consistence, of a disagreeable smell, and a bitter acrid taste. In medicinal virtues, it participates of those of oil of amber, and of turpentine. It is, at present, very rarely employed as a medicine; some of the more common mineral oils, being preferred. An oil extracted from a kind of stone coal, has been extolled under the name of British oil for external purposes, against rheumatic pains, paralytic complaints, and

for preventing chilblains. The rock oil is esteemed by the inhabitants of the West Indies, as a sudorific, and serviceable in disorders of the head and lungs.

BARBERRY. *Berberis Vulgaris.* The bark and berries.

It grows in the form of a bramble, from one to six feet high, by the sides of roads and hedges; bears clusters of long red berries, which are ripe at the time of frost, but stay on through the winter; they are a pleasant sharp acid, and are often made use of in preserves, as a jam, which is very grateful in acute diseases. The bark of the root, boiled and made into beer, has cured the jaundice; it makes a very pleasant detergent bitter. The leaves and berries, made into a conserve, are beneficial in putrid fevers, bilious diarrhœa, dysentery, &c.

BARLEY. Pearl (or hulled) barley.

Pearl barley is the seed stripped of its husk. In diseases of the kidneys and the breast, as well as in that state of the body when it is said to abound in acrimonious humors, decoctions made of this grain, sufficiently strong, and acidulated with vinegar, are eminently useful. As a cooling and diluent beverage, barley water is of essential service to febrile patients, and in all inflammatory cases, where preternatural heat and thirst prevail.

BAYBERRY. *Myrica Cerifera Humilis.* The bark of the root.

This shrub rises three or four feet in height, is scraggy, with many branches set full of long, smooth, green leaves; from the sides of the branches grow small green berries, covered with a pale green tallow. It grows plentifully in the New England States, and in other parts. A tallow is obtained from the berries by boiling, known as bayberry tallow.

The leaves and berries are warm carminatives, stomachic, emmenagogue, beneficial in palsies, colic, hysterical complaints, and promote urine. But the bark is chiefly used. It is eminently serviceable in scrofulous affections, for which it should be drank in decoction, and constantly applied to the tumor as a discutient poultice. This application will not be found inferior to any other, or all species of scrofulous swellings. The decoction of bayberry bark is a good remedy for jaundice, and is effectual in removing all obstructions of the liver, spleen, kidneys, urinary passages. It has also been employed in dysentery, and dropsy. The bark, chewed, is a good sialagogue; and when pulverized, forms a most powerful sneezing snuff, which may be used with great advantage in many diseases of the head. Bayberry is one the most valuable medicinal plants that we have.

Sweet Bazil.

This is a cultivated plant growing in gardens. According to Culpepper, it will extract the poison of serpents, or of wasps and hornets, when applied to the wounded part. He also says it will expel both birth and after-birth.

Bearberry. *Uva Ursi.* The leaves.

This is an evergreen shrub, or vine; the leaves oval, not toothed, of a pale green color, and smooth on the under side; flowers whitish, terminating the stem in clusters. It grows on mountains, and dry upland, in different parts of the United States, and in some places it is known by the name of *wild cranberry*.

The leaves have a bitterish taste, and are astringent and tonic, in which their medical virtue consists. It is excellent in all debilitating discharges, and particularly in ulcerations of the kidneys, bladder, and urinary passages; in fluor albus, diabetes, excess of menses, diarrhœa, dysentery, &c. Professor Barton commends it highly, from experience, in affections of the kidneys proceeding from gout, and has found it serviceable in old gonorrhœa. It may be exhibited in decoction, or in powder, a tea spoonful at a dose, three or four times a day.

Haller recommends the acid liquor distilled from the herb as an effectual remedy in gravelly complaints. He says, that this acid, double distilled, taken from half a gill to a gill, four times a day, attacks the calculi formed in the human body, reduces them to small pieces, and softens those it does not break, so that they may be discharged. It has not maintained this high character, however, of late years, although it is an excellent medicine for the purposes above mentioned.

Beech Drops, or Cancer Root.

This plant grows out of the roots of beech trees, in low grounds, and rises six or eight inches in height, of a brown, glossy color, with brittle sprigs, but no leaves. The root is bulbous, similar to a cancer, from whence it derives its name. It must be gathered before the frost touches it.

The beech drops are a powerful astringent, and cancers have been effectually cured by the application of the fresh bruised root, frequently applied. It is very beneficial in the cure of St. Anthony's fire, and canker in the throat. It may be prepared by boiling eight ounces of herb to two quarts, and sweetened. After proper evacuations, persons subject to the Erysipelas may take a tea cupful of this decoction four times a day, at the same time applying cloths to the inflamed part, wet with the decoction, not sweetened, and continue till well.

Beth Root. *Trillium Atropurpuerane.*

This is a beautiful, modest plant, and is generally known throughout the country, although most people are ignorant of its value. It rises about a foot high, has three large leaves at the top of the stem, from between which appears a solitary flower, bell-shaped, and of a purple or white color. The root is bulbous and full of small fibres, of a brown color externally, and white within.

Beth root is a powerful astringent and tonic, and is also considerably carminative. It is an admirable medicine in all species of female weaknesses and debility, particularly in the whites, and bearing down of the womb; for which purposes I have used it many years, and have seldom been disappointed in its operation. It is very bracing, strengthening, and stimulating, and is grateful to the spirits. My method of preparing it will be found among the recipes. In floodings, bloody urine, and other hemorrhages, it is very effectual in restraining them: the dose may be, a tea-spoonful of the pulverized root three or four times a day, in yarrow tea, or something similar. Beth root and blood root, equal quantites, mixed with honey, form an excellent application for arresting gangrene or destroying a carbuncle.

Betony. *Betonica officinalis.*

This plant rises about a foot in height; the stem square and hairy, the upper leaves on short foot-stalks, the lower on long, opposite, and hairy; the flowers in spikes composed of several whorls, of a purple color; It grows in upland woods and old pastures, in every part of the United States.

The roots are emetic and cathartic; the leaves and flowers are corroborant and detergent; and the leaves alone are cephalic. It has been found effectual in the cure of the gout and chronic rheumatism. For these purposes, take a table spoonful of the powdered leaves twice a day, in a dish of prickly ash tea; and also drink an infusion of the herb, made by pouring a quart of boiling water on a handful of the herb, taking a tea cupful four times a day. Two parts of betony leaves and one of asarabacca leaves, finely pulverized and mixed, form an agreeable cephalic snuff, very useful in giddiness, headach, megrims, &c.

Black Birch. The inner bark.

The bark of this well known tree, is of some medicinal account. A tea made of it, and drank with milk, for a daily drink, is very useful to bring milk into womens' breasts, and to render them fruitful. The sap of the tree, drank freely, is good in gravelly obstructions; it is also anti-scorbutic and cleansing, and heals a sore mouth.

Bistort, or Snakeweed. The root.

This plant is perrennial, and is a native of Great Britain. The root is about the thickness of the little finger, of a blackish brown color on the out side, and reddish within; it is writhed, or bent wormlike, with a joint at each bending, and full of bushy fibres. All the parts of the bistort have a rough, austere taste, particularly the root, which is the strongest of the vegetable astringents.

The root of the bistort is employed in all kinds of immoderate fluxes, both externally and internally when astringency is the only indication. It is certainly a powerful styptic, and is to be looked upon simply as such; although it possesses, consequently, some degree of antiseptic power, in common with other styptics. The largest dose of the root in powder is one drachm.

Bitter-Sweet. *Solanum Dulcamara.* The bark and twigs.

This plant rises eight or ten feet high, and entwines around the trees as a vine; but if there be no shrubs in their vicinity, the shoots creep along the ground, and frequently strike new roots. It flowers in June and July, color purple, with yellow anthers, always turning from the sun. The berries are of a bright red, similar to currants, and of a bitter-sweet taste. It grows in low grounds and marshes, and is sometimes mistaken for ivy, which is poisonous.

The bitter-sweet is a powerful and useful medicine, though, like most of the invaluable medicinal plants which Nature so profusely furnishes to our hands, its virtues are appreciated but by few. It increases all the secretions and excretions, particularly sweat, urine and stool, and excites the heart and arteries. It is an excellent discutient, detergent, and resolvent medicine, and may be employed both externally and internally. It is peculiarly beneficial in real liver complaints, and in all cutaneous affections; also in rheumatism, schirrous swellings, ill-conditioned ulcers, scrofula, whites, jaundice, and obstructed menses. Cancers of the breast have been cured by the application of the juice over the cancer, and the green leaves applied over the breast. For internal use, boil half a pound of the bark to one gallon, the dose a gill three times a day. It is also good in fevers and dropsical swellings.

The "bitter-sweet ointment," the preparation of which will be found among the recipes, is of superior efficacy in diseases of the breast to which women are subject after delivery.

Black Henbane. *Hyoscyamus Niger.* The herb and seeds.

This poisonous plant rises from one to two feet in height; the leaves are large, cut into irregular lobes, or pointed segments, undulated, and embrace the stem; flowers bell-shaped, color a dingy yellow, with purple streaks, which is a characteristic mark of all poisonous herbs or plants. Henbane has a rank, strong, fœtid smell,

and an insipid taste; when burnt it smells like tobacco. It is an annual plant, and grows by the side of roads and fences, and about old ruins; it is found in most of the northern and western states.

Its properties are, narcotic, anodyne, phrenetic, antispasmodic, repellent and discutient. The whole plant may be used; but the seeds are preferable. It is chiefly used in extract, however, which should be made from the juice, without boiling, by drying in the sun: the dose is from one to fifteen grains, according to its effect. It operates as a powerful narcotic, and if taken in large doses it produces drowsiness, intense thirst, headach, dilatation of the pupil, delirium, and other symptoms of vegetable poison. But taken, in a proper dose, it eases pain and procures sleep, and is efficacious in palpitations of the heart, coughs, spasms, convulsions, madness, epilepsy, hysterical complaints, and a variety of nervous maladies, and dropsies; far superior to opium in such complaints, leaving the stomach soluble, without affecting the head. Combined with valerian, it forms an excellent remedy in the tic doloroux.

The external use of henbane is very efficacious as a discutient in hard and schirrous tumors, and cancers, and is similar in effect to stramonium. It is an excellent cleansing application for old foul ulcers.

Blackberry. The bark of the root.

The bark of blackberry roots, boiled in milk, is a good remedy in dysenteries. It should be taken freely. Or, the unripe berries, two pounds, bruised and simmered with one pound of loaf sugar, and a half pint of brandy, strained, bottled up, and used, may be given in dysentery. This is one of the best remedies I am acquainted with.

Black Pepper. The fruit.

Pepper, from its stimulating and aromatic qualities, is employed to promote digestion, to relieve nausea, to check vomiting, and hiccup, and as a remedy in retrocedent gout and paralysis. Its dose is from ten to fifteen grains.

Black Snake Root. *Radix Anapodophyllon Nigrus.* The root.

This plant rises three feet in height, and its appearance is somewhat similar to agrimony, the leaves divided into five or six clefts, like the strawberry leaf, but much larger, and smooth; blossoms small and blue. The root is black, and fibres shoot out straight in every direction: It grows in meadows, and in low woods, among rocks.

It is an excellent sudorific, aromatic, emmenagogue, detergent, and anti-scorbutic. A tea of it may be drank freely in all cases where a diaphoresis is necessary, as in most fevers, pleurisies, colds, &c. after the necessary evacuations. The Indians cure the

ague by sweating with this root. The yellow fever has been speedily cured by it, the bile having been first evacuated by an emetic. Women, in order to promote the menses, may bathe their feet in warm water, sitting ten or fifteen minutes over the steam of pennyroyal every night, and drink half a pint of the black snake root tea, with a wine glass of rum in it, at bed time. This must be done once or twice before the full or change of the moon.

This root is said to cure the bite of a snake, by chewing and swallowing the root, and applying it to the bite as a poultice, chewed or bruised.

Blessed Thistle. *Carduus Benedictus.* The herb.

This thistle is an annual exotic plant, cultivated in gardens.

The virtues of this plant, says Dr. Duncan, seem to be but little known in the present practice. A strong infusion, made in cold or warm water, if drank freely, and the patient kept warm, occasions a plentiful sweat, and promotes the secretions in general. The nauseous decoction is sometimes used to promote vomiting, and a strong infusion, to promote the operation of other emetics. Excellent effects have been frequently experienced from a slight infusion of the thistle, in loss of appetite, where the stomach has been injured by irregularities.

Blood Root. *Sanguinaria Canadensis.* The root.

This plant rises early in the spring about six or eight inches high, with large scalloped leaves, somewhat resembling white-oak leaves, and a small white flower; root about the size of the little finger, blood red, and fibrous. It grows in low grounds, among rocks, in meadows, or in the woods near meadows. There is but one leaf to a stalk.

The root is a powerful emetic, cathartic, emmenagogue, pectoral and sudorific. The powdered root, in doses of fifteen or twenty grains is powerfully emetic, and operates very quick. In a spiritous tincture, however, it is given with better effect: two pounds of the dry root, or four of the green, may be infused in a gallon of fourth proof spirits, till the strength is extracted. The dose for an adult of this strength, may be about two thirds of a table spoonful, and repeated every ten minutes till it vomits, though it seldom requires repetition. This is one of the best emetics for children, in croup, and other obstructions from phlegm, that I have ever administered. It operates beautifully, quick, and effectually, and is nowise dangerous, for when it reaches the proper quantity it is certain to come up.

It is beneficial in the cure of rheumatism, jaundice, and beginning consumptions, and is a good deobstruent and stimulant to the solids. For these purposes, it may be prepared by infusing four ounces of blood root and the same quantity of unicorn root in two quarts of Jamaica spirits. The patient may take a wine glass full twice or thrice a day, in jaundice, and chronic rheumatism: it would be well to begin on half a wine glass, and increase according to its effects. One grain of the root, or ten drops of the saturated

tincture, proves efficacious as a stimulant and diaphoretic. The leaves and seeds are a powerful and diffusible stimuli, and promote sweat. A tincture of the root is used to prevent the intermittent fever; and a decoction of the root is used to cure the dysentery.—It is useful in female obstructions.

Blue Cardinal Flowers. *Lobelia Syphilitica.* The root.

This celebrated plant grows in the states of New Jersey and Virginia, and in other places in the United States, and is found in moist meadows, and near brooks and springs. It rises two feet in height; flowers blue, long, single, numerous and spiked; a milky juice, and a rank smell. The root, which is the part used, consists of white fibres about two inches long, resembles tobacco in taste, which remains on the tongue, and is apt to excite vomiting.

It is said to be used among the Indians as a certain cure for the venereal disease; their method of using it was by making a strong decoction of the roots and leaves, of which half a pint was drank every morning, washing the parts with the same. Its virtues in this disease, however, have probably been exaggerated.

Dr. Barton says, it is considerably diuretic: it generally disagrees with the stomach, and seldom failed of affecting the bowels as a strong cathartic.

Blue Flag. *Iris Pseudacorus.* The root.

Also called water flag, flower de luce, &c. This plant is perrennial, and grows in great abundance in most parts of the United States, by the brinks of rivers, in bogs, and low grounds. It blossoms in July; flowers blue, variagated with white, yellow, and purple; its leaves sword shaped. The roots grow in mats, and have an acrid taste.

This root possesses great medicinal power; and from a long experience of its use, I am convinced that it is equally as effiacious as mercury in all the diseases in which, in the common practice, it is supposed mercury is indicated. It serves as an alterative, and sialagogue, in small continued doses; as a powerful drastic purge, a stimulant, a vermifuge, a diuretic, errhine, &c. It is a complete substitute for that mineral, for any of its purposes; and being a vegetable, I consider it far preferable, because, after having its operation and effect, it passes off and leaves the system free; whereas mercury fastens upon the bones and solids, and remains, like a corroding and eating canker, rendering vast numbers feeble and debilitated for life. Such is the difference between these two articles of medicine; and it would be a happy event for mankind if physicians would, for once, divest themselves of their blind prejudices in favor of the mineral, and consent, at least, to make a trial of this vegetable substitute. Their humanity should be a sufficient inducement for this. The plea that the vegetable kingdom contains no equivalent to mercury, is no longer tenable; then why should not physi-

cians discard the use of it at once, when it is universally acknowledged, and felt, that in the aggregate it has proved a curse, a destroyer to the human race. The disuse of it, it is true, would lessen the employment of the medical profession; but the satisfaction they must feel at the proportionate decrease of suffering among their fellow beings, will, no doubt, richly compensate them for the pecuniary sacrifice.

This root loses its virtue by age and long exposure. It contains a large quantity of oil, in which, probably, its medicinal power is contained. My method of preparing it is, immediately after it is dug and cleaned, to either bruise it and infuse it in spirits, for a tincture; or, after carefully cleaning it, and cutting out the dead and inert matter, to dry it quickly before a fire, pulverize it, and bottle it tight, for use. The tincture may be given alone, or combined with other articles, when it is employed as an alterative. For a carthartic, I generally make use of the powder, which may be given in the average dose of twenty grains, repeating if necessary. Its operation is powerful, certain and quick, sometimes taking effect in half an hour; and I have often seen it move the bowels when jalap, gamboge, and other strong purgatives had no effect. I have destroyed tape worms with this alone.

This root, in the hands of a physician of skill and judgment, can be employed to effect many valuable purposes; but it is not to be used incautiously, or trifled with.

Boneset, or Thoroughwort. *Eupatorium Perfoliatum.*

The herb.

This useful plant rises to three feet in height, is hairy; the leaves long, rough, and grow to the stalk in pairs, four inches apart, and appear as if the stem grew through each leaf; flowers white, and blossoms in July and August. It grows by road sides, in meadows, and near brooks of water.

This plant is a valuable sudorific, tonic, alterative, antiseptic, cathartic, emetic, febrifuge, corroborant, diuretic, astringent, deobstruent, and stimulant. It was one of the most powerful remedies of the native tribes, for fevers, colds, &c. It has been introduced extensively into practice throughout the United States, and appears to be superior to camomile, as a sudorific tonic, and far preferable to barks, in the treatment of the local autumnal fevers of the country, near the streams, lakes, and marshes, often curing when other tonics failed. A strong decoction of boneset, taken warm, till it vomits freely, is sufficient to break up almost any fever in its commencement. It cleanses the stomach, excites all the secretions, relaxes constriction, produces a free perspiration, and of course throws off the disease. For colds it is a complete remedy; always observing to take a draught of the cold tea, after the sweat is over, which will prevent an additional cold, on exposure.

The cold preparations are powerful tonics, and do not produce vomiting, as an over-dose of the warm decoction. It acts powerfully on the skin and removes obstinate cutaneous diseases. It has cured the

following disorders in many instances, viz : intermittent and remittent fevers, spotted fever, malignant pleurisy ; diseases of general debility, dropsies, and debility arising from intemperance ; acute and chronic rheumatism ; catarrhs, bilious and typhus fever, particularly low typhus, incident to marshy places, and attended with a hot dry skin ; influenza, lake fevers, and yellow fever itself; ring-worms, scald head, gout and syphilitic pains, dyspepsia, and complaints of the stomach, and the bites of snakes.

Boneset may be so managed as to act as a tonic, a sudorific, a laxative or an emetic, as required. No other tonic of equal activity can be exhibited in fevers, with less danger of increasing excitement, or producing congestion ; the only objection to its general use is its nauseous and disagreeable taste. But this difficulty is surmounted by preparing it in a syrup, or obtaining the extract, which preserves all its properties, and are less disagreeable to the palate. In substance or cold decoction, and combined with aromatics, it becomes very efficient in intermittent and dyspeptic disorders ; it strengthens the viscera and restores the tone of the system. The doses of the powders are from ten to twenty, the decoction and infusion from one to three ounces. No unpleasant effects follow the cold preparations. It is particularly useful in indigestion of old people ; and may be used as an auxiliary to other tonics and emetics in all cases.

Briony, or Wild Vine.

The common white Briony grows upon the hedges and fences, sending forth many large, rough, very tender branches at the beginning, with broad leaves cut into five partitions like a vine leaf, but smaller, rougher, and of a whitish or hoary color, spreading very wide. At the several joints rise long stalks bearing whitish flowers, together on a long tuft, consisting of five small leaves each, opening like a star ; the berries, which are red when ripe, hang in clusters like grapes, have a strong scent, and loathsome taste, producing vomit. The roots lie deep, and are of a sharp, bitter taste. This plant is common in England, but I am uncertain of its existing in America.

The root of Briony is a very drastic purge, and serves excellently well where such purging is required. It is also expectorant, diuretic, and emmenagogue, in smaller doses, as a drachm of the pulverized root ; applied as a drawing poultice, it extracts extraneous substances from wounds, breaks biles, and relieves fellons.

Brook-lime, or Water Pimpernel. *Beccabunga*. The herb.

Brook-lime grows in small standing waters, and usually near water cresses, and is found in most of the eastern and northern states.—This sends forth, from a creeping root with strings at every joint as it runs, green stalks, round and sappy, with branches on them, and broad, round, deep, green, and thick leaves, set by couples ; from which shoot forth long foot stalks, with small blue flowers on them.

The Brook-lime may be used as a diet drink, like cresses. It is antiscorbutic, diuretic, febrifuge, and an excellent emmenagogue. The most beneficial effects are experienced from this herb, in relieving obstructed menses, and in expelling a dead fœtus, when it should be taken in large quantities. In beginning fevers, and coughs, it is very useful, from its relaxing power.

BUTCHER'S BROOM, or WILD MYRTLE. *Ruscus.* The root.

It grows in woods and thickets, in England, and probably in America. It is a small evergreen shrub, and its first shoots from the ground are like the asparagus. It has a small, round, red berry, roots thick, white, and large at the head.

A decoction of the root, with wine, has been recommended as an aperient and diuretic in dropsies, urinary obstructions, and affections of the kidneys; also in the yellow jaundice, and headach.

BROOM. *Genista.* The plant.

This plant has been highly recommended as a purgative and diuretic, particularly in dropsies. The juice or decoction should be used.

BUCK-THORN. *Spina Cervina.* The juice of the berries.

This is a hedge prickly bush, or low tree, and grows common throughout the United States. The leaves are oval, pointed and serrated; flowers male and female, upon different plants, small and in clusters, and produces a round black berry containing four seeds.

Buckthorn berries have a faint disagreeable smell, and a nauseous bitter taste: They have long been in considerable esteem as cathartics; and celebrated in dropsies, rheumatism, and even gout; though in these cases they may have no particular advantage over other purgatives. Henry prepared it in the following manner, for the dropsy: steep one gallon of the expressed juice of buck thorn berries, in an earthen pot for an hour; then strain the liquor through a fine cloth, and add one ounce of ginger, one ounce of black pepper, and half an ounce of powder of masterwort root; to these add two quarts of molasses, and boil all down to two quarts, which should be put into close covered pots for use. Take a gill of this syrup at a dose, and work it off by drinking half a pint of thin gruel, after each stool, which will powerfully purge off the water without griping. As a common purge, the patient may take four table spoonsful, or two ounces, for a dose, and drink thin gruel as above.

The juice, or decoction, causes gripings and pain, and therefore the above syrup, made either with molasses or sugar, ameliorates it, and makes it a brisk and safe cathartic, which may be used as circumstances require.

The bark of the buck-thorn is said to be a mild tonic, astringent and antiseptic medicine and is recommended for the cure of inter-

mittents. The decoction is of great service, reducing inveterate inflammations of the eye, curing the itch, and cleansing the skin.

BORAGE, or BUGLOSS. *Borage.* The leaves, flowers and roots.

The properties of this plant, are refrigerant and cordial, and the juice or a syrup of it may be used with great benefit in all putrid and pestilential fevers, to defend the heart and resist and expel the morbific matter. It is cooling, opening, and cleansing; is of great service in hypochondriacal complaints, and helps to bring milk into women's breasts. It may be used also in consumptions, jaundice, and in all cutaneous affections.

SWEET BUGLE. *Lycopus Virginicus.* The herb.

This excellent astringent herb is gathered and put up by the Shakers, but I am unacquainted with its description. In decoction, and taken repeatedly, it checks internal hemorrhages from the lungs and stomach, more effectually than any thing else I am acquainted with. I make frequent use of it. A small quantity is sufficient for use in a common case. For other purposes it is similar to other astringents.

BUCK HORN BRAKE. The shoots and roots.

This brake is common in swamps and low grounds, and may be known by its growing very large and in mats, from which an immense number of thick, brittle shoots sprout up in the spring ,curling round like a buck's horn, from whence its name.

The properties, of this brake are mucilaginous, tonic and strengthening. The root and shoots, in decoction, or compounded with other articles, forms a very strengthening syrup for female weaknesses, particularly the whites. The same is also an excellent remedy for the rickets in children; and while taking this, the child should be placed upon a bed of the brake tops, and allowed to sleep upon them, constantly. By this means I have cured several ricketty children.

BURDOCK. *Arctium Lappa.* The root, leaves, and seeds.

A well known plant growing on the road sides, or rubbish and ditch banks, bearing purplish blossoms in July and August.

Burdock promotes the sweat and urine, and is of a very cleansing, detergent quality. Where its use is known, it is esteemed superior to sarsaparilla in all diseases proceeding from bad blood. It may be safely used in fevers and other acute diseases, as a deobstruent, and sudorific, as it acts without irritation. The fresh root has a sweetish, bitter, and somewhat austere taste; the seeds have a bitterish, acrid taste, and are recommended as a powerful diuretic, taken either in the form of emulsion, or a powder, in doses not exceeding

one drachm. Decoctions of the root have been employed with great success in rheumatism, gout, venereal, and other diseases; but it does not possess sufficient strength, of itself, to cure these disorders as rapidly as might be desired, and therefore would be more profitably combined with other alteratives, in the form of a syrup.

STRIPED BLOODWORT. *Laphathum Sanguineum Rubrum.* The herb.

This plant rises six or seven inches in height. On the top of the stalk, which is small and bare of leaves, grow purple flowers, which turn into husks that contain the seed. The leaves lie flat upon the ground, are three or four in number, hairy, full of red winding veins, oval shaped, and remain through winter; roots small, tough and fibrous. It grows in uplands throughout the United States.

The properties of this plant are, antiseptic, voluntary, astringent, and pectoral. A decoction of it drank will speedily stop immoderate flowing of the menses, and other hemorrhages. The powder of bloodwort, mixed with an equal quantity of bloodroot, and a little alum, and used as a snuff for polypus in the nose, frequently destroys it, in the course of a week. The decoction of this root, made into a syrup, has been found very beneficial in consumptions accompanied with spitting of blood. The juice of the green leaves of bloodwort, boneset, and rattle snake plantain, equal parts, and a gill drank at a dose is said to be an infallible cure for the bite of a rattle snake, or any other poisonous reptile. The bruised leaves should also be applied to the wound, and changed often.

BUTTON SNAKEROOT. *Liatris Spicata.*

Also called, I believe, corn snakeroot. It grows plentifully in the prairies in the state of Ohio, and is also cultivated by the Shakers. It is called corn snakeroot, because its leaf, like young corn, has prickly points all along its edges, and a larger one at the extreme point of its leaf; it sends up a round stalk sometimes two feet high, with the leaves scattering along upon it; and on the top grows a ball as large as a musket ballet, covered thick with white bloom. The root consists of a knob an inch long, the bottom being the largest, and appears as if decayed or rotted off. There are small roots shooting from this knob. The taste of the root, resembles the black snakeroot, but is not pungent, and infinitely stronger.

The virtues of this root are as yet but little known, and its use has extended but little farther than the cure of the bites of venemous reptiles, for which it is said to be infallible. The root need only be chewed and laid on the wound, and a little of it swallowed. If this can be done when the bite is first inflicted, it prevents the parts from swelling. It is generally, first or last, a speedy cure.

If this root possesses such power in stimulating the different secretions of the system to throw off the poison of reptiles, might it not prove equally advantageous in scrofulous and venereal affections; or in bilious fevers, and infectious diseases?

BURNET SAXIFRAGE. *Pimpinella.* The root.

This plant grows in dry meadows and pastures, and is cultivated in gardens, for family use. It rises about a foot high; leaves variously shaped, having many leaflets; the flowers stand upon terminal umbels; seeds naked, furrowed, and egg-shaped.

The root is found to be resolvent, diaphoretic, stomachic, diuretic, emmenagogue, and is beneficial in all asthmatic complaints, catarrhal coughs, and hoarseness. Chewing the root draws off the saliva, and gives relief in the toothach. An ounce of the dry root, bruised, to a quart of hot water, is sufficiently strong; it may be sweetened. A gill of this may be taken twice a day, for obstructed menses.

BUTTERNUT. *Juglans Cinerea.* The inner bark, and extract.

This tree is well known throughout the United States, and is very commonly used as a moderate, gentle cathartic. The extract of butternut bark is esteemed as a valuable purgative, in doses of from ten to thirty grains, as it does not occassion debility, heat, or irritation; and is greatly commended in cases of dysentery. Conjoined with some more active purgative, it is very efficacious in bilious habits. The bark of the root of this tree will excite a blister. A decoction of the inner bark is advantageously employed as a cathartic in the disease of horses, called, *yellow water.*

BURGUNDY PITCH. The resin of common spruce fir.

This substance is obtained by exudation from incisions in the trunk of the tree. It is boiled with a small quantity of water; is strained; and when cold, forms a concrete resinous matter. This, spread upon leather, and applied to the skin, excites a slight degree of inflammation, and exudation of serous fluid.

In obstinate coughs, affections of the lungs, the hip-gout, and many internal complaints, plasters of Burgundy pitch, by acting as a topical stimulus, are frequently found of great service.

CAJEPUT TREE. *Melaleuca Leucadendron.* The volatile oil.

The tree which furnishes the cajeput oil is frequent in the East Indies. The essential oil, obtained from the leaves, has a green or yellowish color, a strong fragrant odor, and an extremely pungent taste. This oil has been used as a highly diffusible stimulant and antispasmodic, in tympanites, hysteria, palsy, chronic rheumatism, and various other diseases of debility. Its dose is three or four drops: care should be taken, however, that it be genuine, for very little is so, that is commonly kept in the shops. It is also applied externally to relieve rheumatic and gouty pains, and violent headachs. But its most remarkable effect is in that painful complaint the toothach.

From whatever cause this affection may proceed, whether from a carious tooth, rheumatism, acrimony, catarrh, &c, the cajeput oil has generally been found efficacious in removing it, if dropped on lint, and placed beneath the cavity of the tooth, or even around the gum.

Camomile. *Anthemis Nobilis.* The leaves and flowers.

This useful plant is well known in this country, and is very generally used as a domestic medicine. Its qualities are similar to those of boneset, though not equal to it in power. Both the leaves and flowers have a strong, though not ungrateful smell, and a very bitter, nauseous taste; but the latter are the bitterest, and considerably more aromatic. They possess tonic and stomachic qualities, are much employed to restore the tone of the stomach and intestines, and as a pleasant and cheap bitter. Theyhave been long successfully used for the cure of intermittents, as well as of fevers of the irregular nervous kind, accompanied with visceral obstructions. The flowers have been found useful in hysterical affections, flatulent or spasmodic colics, and dysentery. A simple infusion is frequently taken to excite vomiting or for promoting the operation of emetics. Externally, they are used for fomentations, in cases of inflammations and acute diseases. The camomile decoction forms an excellent injection in cases of swelled and inflamed womb, or of bearing down, as I have found by long experience in the use of it.

Camphor Tree. *Laurus Camphora.* The gum.

The Camphor laurel grows in great abundance, and to a very considerable size in the forests of Japan. Camphor is a proximate principle of vegetables, contained in many plants, especially those of the aromatic kind. The camphor gum commonly used is obtained from this tree, by sublimation.

Pure camphor is colorless, semi-transparent, tenacious, and somewhat oily to the touch; its smell is strong and fragrant; its taste pungent and bitter. It is volatile at every natural temperature, inflammable, scarcely soluble in water, but entirely soluble in alcohol, ether and oils.

In moderate doses, camphor produces effects similar to those of other narcotics. Its stimulant operation, however, is not considerable, even in a small dose; and in a large dose it always diminishes the force of the circulation; induces sleep, and sometimes causes delirium, vertigo, and convulsions, ending in total insensibility.—These violent effects of camphor are most effectually counteracted by opium. In a morbid state of the body, camphor allays inordinate actions. When the pulse is hard and contracted, it renders it fuller and softer. It removes spasms and flitting pains; and in delirium, when opium fails of producing sleep, camphor will often succeed.

The most general indication for the use of camphor is the languor or oppression of the vital principle of life. It may therefore be given with advantage, in all febrile diseases of the typhoid kind, especially

when attended with delirium; in inflammations of the lungs; in rheumatism; in eruptive diseases, to favor the eruption, or to bring it back to the skin, when it has receded, as in small pox, measles, &c.; in many spasmodic diseases, especially mania, melancholy, epilepsy, hysteria, St. Vitus' Dance, hiccup, &c.; in indolent local inflammation, to excite action in the part.

The dose of camphor is from five to twenty grains It cannot be given with safety in a larger dose than half a drachm; and in too small a dose, as that of a few grains, it has very little effect. In divided doses it may be given to the extent of a drachm a day. Combined with opium, it forms a powerful diaphoretic. Camphor ought generally to be given in a state of mixture in some fluid form, as being then less apt to excite nausea. It may be diffused in water by trituration with sugar or mucilage.

Externally applied, camphor is used as an anodyne in rheumatism and muscular pains, and as a discutient in bruises and inflammatory affections; it is dissolved in alcohol, or expressed oil, aud applied to the part by friction.

Caraway. *Carum Carui.* The seeds.

This plant is cultivated in our gardens, both for medicinal and culinary purposes. On account of their aromatic smell, and warm, pungent taste, the seeds of caraway may be classed among the finest stomachics and carminatives of our climate. To persons afflicted with flatulency, and liable to colics, if administered in proper quantities, they generally afford considerable relief, and may sometimes be used with advantage in agues. It gives an agreeable flavor to more powerful tonics and stimulants, and therefore be combined with them advantageously.

Carolina Pink. *Spigelia Marilandica.* The root.

This plant is perrennial, and grows wild in most of our southern states. The roots are celebrated as an anthelmintic, particularly for the expulsion of the round worm of the intestines. It is commonly administered in the form of infusion; an emetic is generally premised, and its purgative effect assisted by some simple addition, as senna or jalap. By some the powdered root is directed in doses of ten or fifteen grains; while others prescribe it in drachm doses. But, it should be observed, that when exhibited in large doses and without proper precautions, it sometimes produces very singular and distressing effects upon the nervous system, such as vertigo, pains over the eyes, and dilated pupils. As a vermifuge, pink has acquired general use, and often gives relief, even where no worms are discharged; but its good effects are often lost for want of a stomachic and tonic after treatment, which shall prevent a new generation of worms.

Wild Carrot. *Daucus Carota.* The seeds.

The seeds of wild carrot have a moderately warm pungent taste, and an agreeable aromatic smell. They are carminative, and said to be diuretic.

The roots of the cultivated variety, or common carrot, contain much mucilaginous and saccharine matter. When beaten to a pulp they form an excellent application to cancerous and other ill-conditioned ulcers, allaying pain, checking the fœtid smell and softening the callous edges.

Cinnamon. The bark and oil.

The inner bark of the cinnamon tree, which is a native of Ceylon in the East Indies, although it is now cultivated in the West Indies. This bark is a very useful and elegant aromatic, more grateful to the stomach and palate than most other substances of this class. Like other aromatics, the effects of cinnamon are stimulating, heating, stomachic, carminative and tonic; but it is rather used as an adjunct to other remedies, than as a remedy itself.

The essential oil of cinnamon is one of the most powerful stimulants we possess, and is sometimes used as a cordial, in cramps of the stomach and fainting; or as a stimulant in paralysis of the tongue, or to deaden the nerve in toothach. But it is principally used as an aromatic to cover the less agreeable taste of other drugs.

Cassia. The bark and flower buds.

This tree is very similar to the former; and the bark has a very exact resemblance to the cinnamon. It is distinguished from the cinnamon by being of a thicker and coarse texture, and by its breaking short and smooth, while the cinnamon breaks fibrous and shivery.

Both the bark and buds of cassia possess the same properties with cinnamon, though in an inferior degree; and the former is often substituted for the latter.

Cascarilla. *Croton Eleutheria.* The bark.

This bark is imported from the Bahama Islands, and comes in the form of curled pieces, or rolled up into short quills about an inch in width, externally resembling the Peruvian bark. It has an agreeable smell, and a bitterish, pungent, aromatic taste.

The cascarilla is frequently and successfully administered in intermittent fevers, as a substitute for the cinchona. According to medical writers, it has been employed with uncommon advantage in dangerous epidemic and petechial or eruptive fevers, in flatulent colics, internal hemorrhages, dysenteries and diarrhœas. The virtues of cascarilla are partially extracted by water, and wholly by

rectified spirits, though it is more efficacious given in powder, from ten to thirty grains every four, six, or eight hours.

Castor Oil. From the *Palma Christi* tree.

The palma christi is a native of the West Indies, and flourishes extremely well in most parts of the United States, particularly in the south. The seeds are about the size of small beans, which, in their brittle shells, contain white kernels, of a sweet, oily, but somewhat nauseous taste. The skin is extremely acrid, and one or two of the seeds swallowed entire, operate as a drastic purgative or emetic.

The kernels yield almost a fourth part of their weight of a bland fixed oil, commonly called *castor oil*. It is obtained from them either by expression or decoction with water. The former method is practised in Europe; the latter in Jamaica. To increase the product, it is common to parch the seeds over the fire, before the oil is extracted from them; but the oil thus obtained is greatly inferior to that prepared by cold expression, or simple decoction, and is apt to become rancid. The most eligible method is, to shell the seeds and boil them in water; and as the oil rises, skim it off. This oil is sweet, without bad taste or smell, and as clear as olive oil; and may be kept much longer than that obtained by expression, because the water detains the mucilage, which abounds in the expressed oil, and disposes it sooner to become rancid, and unfit for internal use. Genuine castor oil is thick and viscid, of a whitish color, insipid and sweetish to the taste, and without smell.

Castor oil is a gentle and useful purgative; it in general produces its effects without griping, and may be given with safety where acrid purgatives are improper, as in colic, calculus, gonorrhœa, &c. It is also a vermifuge, and a most efficacious remedy for the dry bellyach and iliac passion, when administered in proper doses, to children and adults; viz.: the dose for the former, from one to two tea spoonsful; and the latter, a table spoonful, repeated every two or three hours. As patients in general have a great aversion to this oil in its pure state, it may be taken swimming either in a glass of peppermint, or simple water, or in form of an emulsion, with mucilage, or with the addition of a small quantity of rum.

Cayenne Pepper. *Capsicum Annum.* The fruit.

This species of pepper is a native of South America, and is cultivated extensively in the West India islands. The pods are long, pointed, and pendulous, at first of a green color, and afterwards of a bright orange red. The taste of capsicum is extremely pungent and acrimonious; setting the mouth, as it were, on fire. Its pungency is completely extracted by alcohol, and partly by water.

Cayenne pepper is an indiscriminate mixture of the powder of the dried pods of many species of capsicum. These peppers have been chiefly used as condiment. They prevent flatulence from vegetable food, and have a warm and kindly effect upon the sto-

mach. Of late they have been employed also in the practice of medicine. There can be little doubt but they furnish us with one of the purest and strongest stimulants, that can be introduced into the stomach; while, at the same time, they leave nothing of the narcotic effects of ardent spirits. It may be given to the extent of six or eight grains, in form of pills; or, it may be combined with myrrh, in proportion of two ounces of the pepper to a pound of the latter, and infused in alcohol, of which a tea spoonful may be taken at a dose. It is an admirable remedy for all painful affections of the stomach arising from flatulency, coldness, phlegm, and debility. In dropsical and other complaints, where chalybeates are indicated, a minute portion of powdered Cayenne forms an excellent addition, and also in lethargic and paralytic affections.

Cayenne pepper is extensively used in the Thompsonian practice, for restoring heat to cold and debilitated systems, and as a preparatory to the lobelia emetic. For this last purpose, a tea *spoonful of* the pepper is taken in tea or powder a few minutes previous to the emetic being given.

In fevers, attended with delirium, or sleepishness, cataplasms of Cayenne pepper have a happy effect. In rheumatisms, a strong tincture of it applied to the pained parts, with friction, give relief almost invariably.

Catnip. *Nepeta Cataria.*

This useful and common herb is well known, and its virtues pretty generally understood, although many consider it too simple to deserve much attention. However, it is well for physicians that catnip is slighted, for if it were used in all cases where it might be with advantage, their services would be less frequently required.

Catnip is an elegant warm cordial aromatic; and in infusion promotes perspiration.

Cat-tail Flag. *Iris Palustris.* The root.

The root of this flag, bruised till it becomes like jelly, forms an excellent application for burns, and is cooling and useful in all species of inflammations.

Red Cedar. *Juniperus Virginiana.* The apples and distilled oil.

The red cedar tree is a native of the United States, grows plentifully in New Jersey, and other states, and from ten to twenty feet high. It produces berries, and also apples, which should be gathered in March. The apples are highly recommended for destroying worms; they may be given to children in doses of from five to twenty grains, and repeated three or four times in the course of a day. The oil obtained from the cedar wood, by burning it in a smothered pit, in the manner that tar is manufactured, is a noble remedy for rheumatism, applied externally. I have known a man, who had suffered

severely with the chronic rheumatism for many years, entirely cured by five or six applicatious of this oil to the part.

Celandine, the Greater. *Chelidonium Major.* The leaves.

This plant grows in meadows and by running brooks; rises two or three feet in height; has many tender, round, green, watery stalks, with large joints, very brittle and transparent; leaves large, serrated, and very tender; the flowers, consisting of four leaves, are yellow, after which come long pods, which when compressed by the fingers, fly into pieces instantly.

The properties of this plant are, acrid, stimulant, aperient, detergent, diuretic, and sudorific. The juice rubbed on warts extirpates them, cures ring worms, and cleanses old ulcers. It has been found beneficial in dropsy, vitiated habit, and green sickness. A poultice made of this plant boiled in milk, has cured the tetters. Infused in vinegar it promotes perspiration. The herb boiled in white wine, and aromatics added, and drank, is excellent in jaundice, and removes visceral obstructions, particularly of the liver.

It is also used for taking films off the eyes; for this purpose take half a gill of the expressed juice of the leaves of celandine, and one gill of the fresh juice of the leaves of ground ivy: dissolve a tea spoonful of salt in it, and keep it in sand in a cellar for use.—The film must be wet with a small hair brush dipped in this juice, three times a day, and afterwards wash the eye with a little warm milk and water. Also, in the cure of the above complaint, the patient may take twenty or thirty drops every morning and evening of the expressed juice of this plant, in a gill of new milk; or half a tea spoonful of the powder of the root in milk, twice a day, increasing the dose occasionally. Twenty drops of the juice, mixed in an ounce of rose water, makes an excellent eye water, which will cure the most inveterate sore eyes, by wetting them morning and evening. A poultice made of roasted roots, washed in vinegar, and applied to scrofulous tumors on the neck, quickly disperses them. An ointment made of the roots boiled in hog's lard is good for the piles.

Centaury. *Centaurium Minor.* The leaves and flowers.

This useful plant rises about ten inches in height; stalks erect; leaves opposite, sessile, oblong, and obtuse; flowers terminal, in bunches, of a pink red color. It grows wild in barren pastures, in most parts of the United States, and flowers in June and July.

Centaury is justly esteemed one of the most efficacious bitters indigenous to the United States, and is a good substitute for the English gentian, which it resembles in taste. It is a good stomachic, emmenagogue, febrifuge, and vermifuge.

Two ounces of the flowers and leaves of centaury, and one ounce of orange peel, may be infused in two quarts of brandy for two weeks. One table spoonful of this tincture taken before breakfast and dinner, will create an appetite; and children having worms may take

two tea spoonsful or more, every morning, which will effectually destroy them. In the cure, and to prevent intermittent fevers, a wine glass full, with twenty drops of elixir vitriol in it, may be taken twice a day on an empty stomach. In fevers, a tea made of two ounces of the flowery tops of centaury, and a handful of balm, in two quarts of rain water, may be drank five or six times a day. In order to bring down the menses, pour two quarts of water on two ounces of tops, and steep for half an hour; then strain, and add a pint of rum. Dose, a tea cupful four times a day, together with fomentations, &c.

WILD CHERRY. *Prunus Virginiana.* The bark, both of the tree and root.

This tree is commonly found in woods and hedges, and bears small black cherries. Its fruit is often infused in brandy, on account of its pleasant aromatic flavor. The leaves are poisonous to certain animals, and even the berries intoxicate different kinds of birds. The Indians use the bark in the cure of syphilis.

The bark of the wild cherry tree is powerfully tonic, and has been frequently substituted for the Peruvian bark with great success. It is slightly narcotic, contains a considerable proportion of the Prussic acid, and commonly produces drowsiness in those who take it. The bark of the root is more powerful than that of the trunk. It has been found useful in dyspepsia and in diseases of the lungs. A strong decoction of the bark is anthelmintic. Very excellent effects have been produced by washing ill conditioned ulcers with a decoction of the bark. The bark of the root, in form of tea, or tincture, is good in jaundice, in agues, and intermittent and bilious fevers, and for female obstructions.

HEMLOCK. *Cicuta. Conium Maculata.* The leaves and seeds.

There are two species, or varieties of this poisonous plant, which are usually compounded together. The first is the hemlock, or true cicuta, known also by the names of snakeweed, death of man, water parsley, poison root, wild hemlock, children's bane, &c. The other, conium maculatum, is commonly known by the names of poison parsley, and spotted parsley; and may be distinguished from the true cicuta by its strong smell, similar to cats' urine, and by its spotted stems and parsley leaves. This species is less actively poisonous than the cicuta, though in warm climates, its strength is much greater; and this constitutes the principal difference in the species, for its properties are similar.

The cicuta grows in wet meadows, pastures and ditches; near streams and swamps, from New England to Georgia and Ohio. The root perrennial, white, long, of the thickness of the finger, contains when it is young a milky juice, and resembles in form the common carrot. In the spring it is very poisonous, in harvest less so. The stalk is from three to six feet high, hollow, jointed, purple or green, smooth and branched. Leaves smooth, alternate, with petioles clasping at the base. Flowers white, in terminal umbels.

Children searching for angelica root, sweet flag, sweet cicely, (which have all a pleasant aromatic taste,) have eaten this root by mistake, and some have died in an hour's time. The effects of this poison, were, violent convulsions, a frothing mouth, bleeding nose, dilated pupils, fixed eyes, &c. When vomiting was naturally produced they were saved, after being very sick for two or three days with paleness, stupor, &c. Persons poisoned in this way, ought therefore to evacuate the stomach immediately, by tickling the throat, or taking an emetic. Vinegar, or lemon juice, may also be given to neutralize the narcotic poison, and afterwards mild purgatives.

Cicuta is resolvent, discutient, narcotic, sedative, and anodyne. It is beneficial in dispersing indolent hard tumors, by giving the powder or extract internally, and applying it externally. It may be given with perfect safety in small doses, beginning by giving the patient, twice a day, two grains of the fine powdered leaves, or the extract, and increasing a grain a day to the quantity which the patient can bear.

The internal use of cicuta was introduced by Dr. Stork, who recommended it particularly in schirrus and cancerous sores, in which it received a very extensive trial. While its efficacy towards effecting a radical cure is established, its utility as a palliative medicine is generally admitted. It has likewise been found serviceable in scrofulous and venereal ulcerations, cutaneous affections, glandular tumors, chronic rheumatism, and various other diseases. In open cancer it often abates the pains, and is free from the constipating effects of opium. It requires to be persisted in for a long time, and till a complete change is effected in the system, to effectually cure these complaints. The dose requires to be increased, in general, to a very considerable extent; at the same time this must be done with caution, as both the dried leaves and extract are variable in their strength. In some cases the leaves have been increased to two ounces a day, without producing giddiness.

To discuss hard, indolent, or schirrous tumors, a plaster of the extract, or a poultice of the leaves, may be applied over it continually, at the same time giving it internally.

Cicuta has been found remarkably successful as a remedy in jaundice occasioned by spasmodic constriction of the biliary ducts. Its antispasmodic powers are also considerable.

The dried leaves are less liable to injury from keeping, than the extract, or inspissated juice. The leaves should be collected in the month of June, when the plant is in flower, and its peculiar smell strong. The drying of the leaves should be performed quickly, before a fire on tin plates, and the powder should be kept in vials, closely stopped and secluded from the light, for this soon dissipates the green color, and with it the virtues of the medicine. The extract should be kept in close covered pots.

Cleavers or Goosegrass. *Gallium Aparine.* The herb.

This vine-like grass grows in hedges, on low grounds, in meadows, and near brooks. It rises from four to six feet in height, climbing

round the bushes near it. The leaves are eight in a whorl. lance-like, and the upper side whitish, with sharp prickles: stem square, the angles being guarded with sharp prickles bent down; flowers small, inconspicuous, and divided into four segments; these change into a fruit, rather large, composed of two berries slightly adhering together, and covered with hooded prickles containing two seeds.

Cleavers is one of the most valuable diuretics that our country produces. I have found it an excellent and speedy medicine in all suppressions of the urine and gravelly complaints, and is a powerful discutient.

It has also been found beneficial in the cure of the scurvy, and spitting of blood. The expressed juice of this plant, mixed with oatmeal to the consistence of a poultice, and applied cold over an indolent tumor, three times a day, keeping the bowels open in the mean time by castor oil, and taking a table spoonful of the juice every morning, will often disperse it in a few days.

Infusions of this herb should always be made in *cold water*, heat destroying its virtues. Three or four ounces of the dried herb to a quart of water is sufficient; this should be drank for common daily drink. It is an admirable remedy in gravelly disorders, often curing them entirely, alone. It seems to possess a solvent power over the stone, or gravel, crumbling it into a sandy substance, so that it is discharged without difficulty. When urinary obstructions proceed from a collection of cold, slimy, or muddy substance in the kidneys or bladder, this effectually clears it out, in all cases. In inflammatory affections of the kidneys or bladder, the cleavers infusion is peculiarly applicable, from its cooling, as well as diuretic, quality. It gives great relief in the scalding of the clap.

The cold nature of cleavers, however, renders its employment in dropsies, and other diseases of cold and debility, improper.

Cloves. The flower bud, and oil.

Cloves are among the most stimulating aromatics, and are supposed to possess considerable power in exciting venereal desire. The dose is from five to ten grains. They are employed principally as adjuncts to other medicines. The essential oil is used with the same intention, and likewise as a local application in the toothach. The pure oil of cloves is not very pungent: that commonly met with being rendered acrid by certain additions.

Sweet Cicely. *Myrrbis.* The root.

This plant rises from two to three feet in height; leaves small, numerous, and on long stalks; flowers small and of a pale white color. It grows plentifully on the sides of low meadows, on the banks of running streams, and on the borders of low woodlands.

The root of this plant is both carminative and expectorant, and may be taken in all cold, flatulent and windy complaints of the bowels. It may be pulverized, and taken in doses of half a tea spoonful, in

a little brandy, for windy complaints; or combined with other appropriate medicines for coughs.

Blue Cohush. *Caulophyllum Thalictroides*.. The root.

Also called, blueberry, pappoose root, squaw root, blue ginseng, &c. It grows from two to four feet high. The root yellow inside, brown outside, hard, irregular, knobby, branched, with many fibres. Stem upright, straight, smooth, dividing at top into three branches, each of which has three leaves, and in the centre of which comes out the flower stem; leaves smooth, lobed, somewhat in shape like the hand. The flowers are of a yellowish green, producing a stone berry, of a dark blue color, something like sour grapes. It is perrennial, growing all over the United States; and is generally found in low, moist, rich grounds, near running streams, in swamps, and on islands that have been overflowed with water.

The root of this plant is demulcent, antispasmodic, stimulant, emmenagogue and sudorific. It is prepared in infusion and tincture. Cohush is used by the Indians, and by many botanists, for rheumatism, dropsy, colic, sore throat, cramps, hiccup, epilepsy, hysterics, inflammation of the womb, &c. It appears to be particularly suitable for female diseases, and Peter Smith asserts, that the Indian women owe the facility of their parturition, to a constant use of a tea of the root for two or three weeks before their time. This may be the case with the females of some of the tribes, but with others, I know that the squaw berry vine, partridge berry, or winter clover, as it is called, is used for that purpose, and most successfully too. As a powerful emmenagogue, cohush promotes delivery, menstruation and dropsical discharges, and is serviceable in venereal complaints. It has been found efficacious in the cure of yellow fever.

For rheumatic complaints, two ounces of this root and one ounce of blood root, bruised and infused in three pints of rum, may be used; a wine glassful three times a day for a dose. For the dropsy, pour two quarts of boiling water on one large root, bruised, of which a tea cupful may be taken four times a day.

There are four species of the cohush, viz. the one above mentioned, the red, black, and white, all of which except the black, are known by the color of their berries. Their qualities, however, are similar.

The *White Cohush* grows about two feet high, dividing itself into long branches towards the tops, producing pointed leaves, cut in the edges with sharp notches. From the centre grows a stem producing white berries. Its quality is opening and stimulating: good in colic, &c.

The *Red Cohush* very much resembles the white, except the berries. The root is cleansing and stengthening, good in female obstructions.

The *Black Cohush* has a stalk from four to six feet high, producing white flowers, succeeded by shells which contains the seed. The root is externally black, and irregularly shaped, with many prongs, or fibres. It is a powerful stimulant—good in rheumatism.

Colombo. The root.

This valuable root was formerly imported altogether, but of late years it has been found in great quantities in the states west, north, and south of the Allegany mountains, but very little east of them. The native Colombo is equal in all respects to the foreign, except, perhaps, it is not quite as strong, generally. It is found in great abundance in the rich glades of the western states, where it grows most luxuriantly, sometimes attaining the height of ten feet.

The American colombo is one of the handsomest native plants, having a large pyramid of crowded flowers sometimes three or four feet long. It is a true triennial, and the stalk and flowers not shooting up till the third year. The root is large, yellow, tuberose, hard, horizontal, spindle-shaped, two feet long sometimes, with few fibres. The whole plant perfectly smooth, stem from five to ten feet high, round, erect, solid, with few branches, except at the top, where they form a pyramid of flowers. Leaves in whorls, the radical or root leaves form a star spread upon the ground, from five to twelve in number, from ten to eighteen inches long, and from three to five broad, constituting the whole plant in the two first years, or before the stem grows. The stem leaves are in whorls, from four to eight, smaller than the radical leaves. Flowers yellowish white, numerous, large, forming an elegant pyramid. Its seed grows in pods, shaped like a horse bean, and are much like parsnip seeds. The root has a sweetish bitter taste, like gentian. The leaves are also bitter.

Colombo root is emetic and cathartic when fresh; tonic, antiseptic and febrifuge when dry. It yields its bitterness to water, but proof spirit is its proper menstruum. The doses are two drachms of the powder, or one or two ounces of the infusion. The root ought to be collected from the fall of the second year to the spring of the third year of its growth.

This root is a powerful antiseptic and bitter, and is used with great success in diseases of the stomach and debility. It has cured a wide spread gangrene of the lower limbs by internal use and external application, when bark fails. It avails in intermittents, like other pure bitters, and is extensively used in the western states, in fevers, colics, griping, nausea, relaxed stomach and bowels, indigestion, &c. As a purgative, it is substituted for rhubarb in many cases, particularly for children and pregnant women, being found serviceable in the constipation of pregnancy. It has the advantage of not heating the body. Cold water is said to add to its efficiency, and prevent nausea or vomiting. A tea spoonful of the powder in hot water and sugar, will give immediate relief in case of heavy food loading a weak stomach. It is a good corrector of the bile, alone, or united with other bitters. It is advantageously employed in consumptions, dyspepsia, jaundice, scurvy, suppressed menses, &c.

The Colombo leaves occasion sweat copiously, when laid to the forehead, and will commonly relieve the headach: this will also apply to any kind of inflammation, rheumatism, &c. To finish the cure of fevers, it should be taken in some form, until the health is

confirmed. Such is the efficacy of this root, (says Peter Smith,) that when they who take it recover, they are indeed well at once, needing no other medicine. Bitters made of this root are proper to confirm health.

Coltsfoot. *Tussilago Farfara.* The leaves and flowers.

This grows on high, moist, clay ground, producing yellow flowers in February and March; these soon fall off and are succeeded by large roundish leaves close to the ground, hairy underneath, and standing on long radical foot stalks. The flower stem grows eight inches high, and is covered with small pointed purple leaves, like scales. Their taste is herbaceous, somewhat glutinous, and subacrid. The root is long and slender, somewhat greenish, running in different directions, brittle, pungent, and aromatic.

The juice or decoction of the dried leaves has been found efficacious in the scrofula. The leaves powdered fine and a small pinch taken at bed time, removes the giddiness, and all other obstructions of the head and nose. It is a good medicine in coughs, asthmatic complaints, pain in the breast, and promotes expectoration.

A decoction may be made in proportion of one pound of the dried roots and leaves, boiled to three quarts; and in king's evil, half a pint of this may be taken three times a day. For a consumptive cough, a gill of this decoction may be taken four times a day.

Comfrey. *Symphitum officinalis.* The root.

This well known and useful plant rises about two feet in height: leaves very large, similar to water dock; roots long, thick as a man's thumb, very mucilaginous, and are black externally, and white within; flowers of a pale blue color. It grows in moist meadows, near springs, and is planted in gardens for family use.

The roots are demulcent, and mucilaginous, similar to marshmallows. They correct salt sharp serum and acridity of the humors. Boiled in wine or water, or in a syrup, it heals internal injuries and soreness, erosions of the intestines from diarrhœa, dysentery, &c. and prevents the spitting of blood. It is very beneficial in pulmonary affections, and coughs, promoting expectoration. It forms a good adjunct in many medicinal preparations. The root fresh bruised is a good application for bruises, ruptures, fresh wounds, sore breasts, ulcers, the gout, &c. Comfrey is an ingredient in the "female syrup," mentioned among the recipes.

Colt Tail, or Fire Weed. *Erigeron Canadense.*

Colt tail, taken freely in tea, is good in dysentery, bleeding piles, fluxes, &c. The powdered leaves, applied to wounds, stops their bleeding; taken as snuff, it stops the nose bleed. It is a very styptic and astringent.

COMMON COW PARSNIP. *Heracleum Sphondylium.* The root.

This article was brought into notice by the late Dr. Orne, of Salem. It grows in hedges; the stalk is large and tubular, invested with a down, which also covers the leaves, that are large and jagged, five on each stalk, and of the color of wormwood; it is umbelliferous, and flowers in June; the root is divided into several long fibrous branches, ches, resembling the larger parsley root; and the height of the plant in its maturity, may be from two to four feet. The root has a rank strong smell, and a pungent and almost caustic taste; it should be carefully distinguished from the common parsnip, that grows wild in gardens and hedges; and indeed it has a very different appearance.

The particular disease in which Dr. Orne recommends the cow parsnip, is that of epilepsy, especially when it proceeds from, or is accompanied by, flatulency. He commonly prescribed two or three drachms of the pulverized root, to be taken every day for a great length of time, and a strong infusion of the leaves and tops, to be taken at bed time.

In the hands of other practitioners, this plant has manifested considerable efficacy, acting immediately on the stomach, as an excellent carminative; and if it does not cure epilepsy, it generally mitigates the distressing symptoms attending that disease. In some cases of dyspepsia, accompanied with flatulencies and heartburn, a strong decoction of the plant has been given with satisfactory success.

COWHAGE. *Dolichos Pruriens.* The stiff hairs which cover the pods.

Cowhage is a native of the West Indies. The stem is climbing, and twists around neighboring trees, and rises to a great height; leaves triple; flowers also triple, very large, and of a deep purple color. The fruit is an oblong pod, in the shape of the letter *S*, the outside of which is thickly set with stiff brown hairs, which when applied to the skin, occasions most intolerable itching. The ripe pods are dipped in molasses, or thick syrup, which is again scraped off with a knife. When the syrup is rendered by the hairs, as thick as honey, it is fit for use. It acts mechanically as a vermifuge, occasions no uneasiness in the first passages, which are defended by mucus, and may be safely taken from a tea spoon to a table spoonful, in the morning, fasting. The worms are said to appear with the second or third dose, and by means of a purge, in some cases, the stools have consisted entirely of worms. A decoction of the roots of cowhage is esteemed a powerful diuretic, and a vinous infusion of the pods, (twelve to a quart) is said to be a certain remedy for the dropsy. The dose is half a pint when made into beer.

CRANESBILL, OR CROWFOOT. *Geranium Maculatum.* The root.

This plant is perrennial, grows in low meadows, throughout the

United States; has long slender stalks, from one to three feet high, with seven long narrow leaves, or segments at a joint; flowers single, on long stems like a crane's bill, springing from the wings of the leaves. The root is crooked, knotty, of a blackish color on the outside, and reddish within. It has an austere styptic taste, accompanied with a slight kind of aromatic flavor.

This root has long been held in great estimation by botanic physicians, as a very powerful astringent. As it contains but little resin, it is more particularly adapted to cases where heating and stimulating medicines are less proper, as in phthisical diarrhœas, dysentery, &c. It is a better tonic than kino, and therefore preferable to it in the treatment of morbid fluxes, connected with relaxation and debility. It is extensively used in the country for all bowel complaints; but sometimes improperly too early. A decoction in milk is very good in looseness of the bowels and diarrhœa. A gargle of the decoction is useful in sore throat, and ulcerations or apthous sores of the mouth and throat. The infusion is a valuable lotion in unhealthy ulcers, and passive hemorrhagy, and also one of the injections in gleet and whites. Our Indians value this plant highly, and use it for wounds, gonorrhæa, ulcers on the legs, diabetes, bloody urine, involuntary discharges of urine, menses, &c.

The doses are one to two ounces in infusion or decoction, two to four drachms in tincture, fifteen to forty grains of the powder, and ten to fifteen grains of the extract, which is a most powerful and efficient astringent. Joined with gentian, it cures intermitting fevers more effectually than Peruvian bark.

Water Cresses.

Grow plentifully in brooks and stagnant waters; have many weak, hollow, sappy stalks, shooting out fibres at the joints, and long winged leaves, of a brownish color. Its flowers are numerous and white, standing on long foot-stalks, and the seed is contained in long pods, like horns. The whole plant is green in winter, and tastes hot and sharp.

Water cresses are valuable for their anti-scorbutic qualities. It is powerful against the scurvy, and to cleanse the blood and humors: it is also considerably diuretic, and emmenagogue. A decoction of it is a cleansing wash for ulcers. They are a good remedy in the spring to cleanse the blood of gross humors, and enliven the spirits. They may be eaten as salad, or as greens, or pottage.

Sciatica Cresses.

This rises with a round stalk about two feet high, spread into branches; the flowers are white, and small, growing at the tops of the branches, afterwards producing husks, with small brownish seeds, of a very strong and sharp taste. The root is long, white, and woody. Grows by road sides, by walls, and in untilled places.

A salve made of the fresh plant, beat up with lard, and applied to

the sciatic hip, is said to cure it. It should be continued on four hours, and the place afterwards bathed with wine and oil, mixed, and then wrapped in wool or skins after they have sweat a little. This is also said to be equally efficacious in other gouty affections of the joints.

Meadow Crowfoot. *Ranunculus Pratensis.* The tops.

This species of crowfoot, has many dark green, furzy leaves, resembling a crow's foot, or a frog's foot, in taste, biting and sharp, blistering the tongue; it bears many flowers of a bright resplendent yellow color, after which shall beads of seeds appear, round and ragged, like a pine apple.

An ointment of the leaves or flowers has been used for purposes of blistering, and are said to have the advantage of cantharides in producing a quicker effect, and never causing strangury. The use of it seems to be particularly applicable to fixed pains, and such complaints as require a long continued topical stimulus or discharge from the part, in the way of an issue, and in various cases has been found to be a powerful remedy.

Crawley, Dragon's Claw, or Fever Root.

The root of this invaluable plant, pulverized, composes the "*fever powders,*" so often recommended throughout this work. It is newly discovered, and known only to few botanists in the United States. It does not grow very plentifully, as far as has yet been discovered, though it is found in Connecticut, near Westchester county, on the sides of hills about Albany, and the western part of this state. It grows in beds or patches, rises six or seven inches high; the leaves grow in a cluster from the top of the root; blossoms yellow; a small black root, resembling cloves, or a hen's claw, as it is sometimes called, very tender, and has a strong smell, similar to nitre.

It is a powerful febrifuge, and an agreeable anodyne; and I have found it a sure and quick medicine in exciting perspiration, without increasing the heat of the body. The root is effectual in all remittent, typhus, nervous, and inflammatory fevers; and will relieve cramps, constrictions, and all pains caused by cold, &c. It produces a general relaxation of the system, equalizes the circulation, and brings a moisture on the surface.

I verily believe that this root, properly administered, with such other medicines as may be necessary, will break up any fever in the space of two or three days, not excepting "continued," typhus, or yellow fever; and that death, from any species of fever, would be rarely known.

Pulverize the root fine, sift it, and put it in bottles, well stopped from air. After proper evacuations of the stomach and bowels, a small tea spoonful of this powder may be given every twenty minutes, in a little pennyroyal or other herb teas, till a gentle breathing moisture appears on the skin, or till from four to six are taken, which has never failed, in my practice, of answering the purpose

It gives most agreeable relief from the pain and anxiety usual in acute fevers. With these powders I have often given quick relief from the excruciating pain of a supposed attack of the liver complaint; which, however, was caused by wind pent up in the bowels. It is an excellent medicine in pleurisy, and inflammations of the chest and brain, and is a sure remedy in erysipelatous fevers.

Cubebs. *Cubebæ.* The fruit.

This is a warm, aromatic, balsamic spice, imported from the East Indies. It is considerably used in the cure of clap, and will sometimes succeed in checking it, in slight cases, when copaiva, &c. fails, though it is not to be depended on. It may be chewed, or pulverized and taken in milk.

Culver's Root. *Callistachia Virginica.* The root.

This plant rises two or three feet high; has large leaves coming out at the joint, from four to seven in number, according to its age; a white tasseled blossom grows on the top of each branch, frequently as long as the finger. From a common stool proceed a number of pale yellow roots, about as large as knitting needles, and taste very bitter. A large handful of the roots made into a decoction, is sufficient for a common dose.

This root is an excellent purge, particularly in pleurisies; it possesses considerable narcotic property, and sometimes it is necessary to rouse the patient to keep him from falling asleep during its operation. It may be pulverized generally for a purge.

Crosswort. *Cruccata.* The herb.

Grows two feet high; leaves lance shaped, and are opposite each other in the form of a cross; flowers very conspicuous and yellow. It is found plentifully in old upland pastures, and is called by the country people yellow balsam, as they have experienced its good effects in curing colds and coughs.

A tea of this herb is an excellent expectorant, and very beneficial in relieving coughs and creating an appetite.

Dandelion. *Leontadon Taraxacum.* The root and leaves

A well known, indigenous, perrennial plant, growing in meadows and pastures, on road sides, banks, &c.; has many long deep gashed leaves, lying on the ground; and several slender, hollow, weak, naked foot stalks, each bearing at the top one large yellow flower, which has the remarkable quality of expanding early in the morning, and closing in the evening.

The root, leaves and stalk, contain a large proportion of bitter

milky juice, which possesses considerable activity. Its more immediate action is to remove visceral obstructions, particularly of the kidneys and urinary passages, and the spleen. It is one of the best remedies for a real affection of the liver, with which I am acquainted, and is useful in all dropsical and hypochondriacal complaints. A table spoonful of the fresh juice may be taken three or four times a day, though some prescribe larger doses. It is very effectual in schirrus and hardness of the liver. A decoction may be made of it, but it is inferior to the pure juice.

Daisies. The herb.

The juice or decoction of these common plants drank freely, is healing, cleansing, antiscorbutic, and useful in visceral obstructions. The leaves bruised and applied to a swelled and inflamed testicle, or any other inflammation, gives great relief; inflamed parts may also be fomented with them, with benefit.

Deadly Night Shade. *Atropa Belladonna.* The leaves.

This poisonous plant grows about old waste stony places, in grave yards, along roads sides, and in mountainous and woody situations; and is often cultivated in gardens. Its root is very thick, whitish, sending forth stems from three to five feet high; leaves of an unequal size, egg-shaped, and pointed, and are in pairs, on short foot stalks: flowers of a dark purple, large, pendant, bell-shaped and furrowed, the border cut into five segments.

Night shade has been found, notwithstanding its powerful narcotic qualities, to be a valuable remedy in many disorders, and may be given internally as well as applied externally. It is almost a specific in the scarlet fever and putrid sore throat; at least, I have never known it fail, when properly used in those diseases. A drop or two, twice a day of a pure, saturated tincture, made from the herb, is enough: more might be harmful. Or, a drink may be made by pouring a quart of boiling water on half a drachm of the dry, pulverized leaves, of which a table spoonful may be taken morning and night, increasing gradually to nearly a tea cupful, according to its effect. This decoction may also be used with advantage in the cure of cancers, schirrus and indolent tumors, and the like; at the same time applying a poultice of the powdered leaves, wet with vinegar, over the cancer or tumor, twice a day, till it is broke or discussed. If it breaks, the ulcer may be washed with an infusion of the herb, and the dry powder sprinkled over it, or a poultice of the same applied daily, till the cancer is cured. For the cure of cancers and ulcers in the legs, the above is often sufficient; but it requres to be administered by a skilful hand. The night shade is sometimes given in powder, of which one fourth of a grain is a dose for a child, or a grain for a man, repeated daily, and gradually increased.

DEVIL'S BIT. *Veratrum Luteum.* The root.

This plant rises two or three feet in height, with a small round green stalk, set with many long, smooth, dark green leaves; at the end of each branch stands a round head of many small blue flowers.

It grows in moist meadows and pastures: root bulbous, with many small hairs or fibres, of a blackish color outside, and brown within. It has been confounded with the star root, but it is an entirely different article.

The root is a good astringent, and is efficacious in the cure of scrofula, relieving after pains in women, pain in the breast, and a gargle in putrid sore throat. For the cure of scrofula, boil four ounces of the bruised root to two quarts, and give a tea cupful for a dose, four times a day.

BITTER DOGSBANE. *Apocynum Androsemifolium.* The root, flowers, and leaves.

Also bitter root, fly trap, honey bloom, &c.

This is rather a common plant, found in most parts of the United States. It grows in woods, hills, dry, sandy soils, along fences, and in old fields. The root is perrennial, large, bitter, and milky, like the whole plant; stalk very smooth as well as the leaves, with a tough fibrous bark, from three to five feet high, with few leaves and branches, round, and often rose-colored; leaves opposite, two or three inches long, ovate, acute, pale beneath, with one large nerve; flowers on flower stems, lateral and terminal, always longer than the leaves, nodding, few, and bell-shaped; flesh or rose colored.

This is a very active plant. It is tonic; emetic, alterative and syphilitic. The root is the most powerful part: but it must be used fresh, since time diminishes or destroys its power. At the dose of thirty grains of the fresh powdered root, it acts as an emetic, equal to ipecac; in smaller doses it is a tonic, useful in dyspepsia and fevers. Some of the southern tribes of Indians employ it in syphilis, and consider it a specific; they use the fresh root chewed, swallowing only the juice. It has been used for the same purpose in Kentucky and Tennessee, and kept a secret.

DOGWOOD, BOXWOOD. *Cornus Florida.* The fruit and bark.

This is one of our most beautiful and useful shrubs, growing in moist woods and swamps, in almost every part of the United States. It is so well known by its large white flowers, which appear early in May, that it needs no description.

The bark, berries, or flowers, are excellent tonics, antiseptics and febrifuges, and, in my opinion, superior to the Peruvian bark for all the purposes in which that is used. The ripe fruit or berries, infused in brandy or spirits, make an excellent bitter. The powdered

bark may be used in intermittent and remittent fevers, and all febrile disorders, in doses of from twenty-five to thirty-five grains, often repeated; or it may be used in warm infusion, for these purposes.

In cases of debility it acts as a corroborant, and may be joined with gentians, colombo, camomile, seneca root, &c.

Yellow Dock. *Acetosa Vulgaris.* The root.

Also, sour dock, from the leaves being sour, although the root is bitter. It has a long yellow root, and is well known.

Yellow dock is a valuable detergent and cleansing medicine. It is supposed to possess considerable efficacy in curing cancer, and similar affections, for which the decoction of the root should be drank continually, and a poultice of the bruised roots laid on. It is considerably narcotic, and requires to be used with judgment. A pound of the green roots may be boiled to a quart, and a table spoonful taken at a dose, three times a day. Too large a dose will produce vomiting. Ten grains of the pulverized root is also a dose.

Yellow dock may be used alone, or in a compound, in all eruptive disorders arising from impure humors, particularly in scrofula.

Deer Food. Frog Leaf. *Brasenia Hydropeltis.* The leaves.

Grows in the southern and some of the western states, found only in some local places, but extremely abundant, and spreading so as to cover the whole surface of ponds, lakes, marshes and sluggish streams. The roots creep in mud and water; leaves resemble an oblong shield, stem in the centre, with regular radiating veins, the leaf smooth on top, white and covered with a coat of pale jelly beneath, and floats on the water; flowers of a dark purple color.

It is mucilaginous, astringent, demulcent, tonic, and nutritive: has no smell, but the taste is sub-astringent and bitterish. The fresh leaves may be used like lichen, in pulmonary complaints, and dysentery, debility, &c. and should be boiled into a decoction or jelly.

This plant is sometimes known by the name of water shield, and little water lily, and is a favorite food of deer.

Elaterium, or Wild Cucumber. *Cucumis Agrestis.*

The dried juice of this plant is the elaterium of the shops. It has neither smell nor taste, and is the most powerful cathartic in the whole materia medica. Its efficacy in dropsies is considerable; it requires great caution in the exhibition, however. From the eighth to the half of a grain should be given at first, and repeated at proper intervals till it operates.

Common Elder. *Sambucus Nigra.*

The inner bark, flowers, and berries. This tree is frequent in

hedges, flowers in May, and ripens its fruit in September: the berries have a sweetish, not unpleasant taste; nevertheless, eaten in substance, they offend the stomach.

The expressed juice of the berries, dried to the consistence of a rob, proves an useful aperient medicine; it opens obstructions of the viscera, promotes the natural evacuations, and if continued a length of time does considerable service in various chronical disorders. An ounce of the juice of the berries, purges.

The inner green bark is greatly cathartic. An infusion of it in wine, or the expressed juice, in the dose of half an ounce or more, is said to purge moderately, and in smaller doses to prove an efficacious deobstruent, capable of promoting all the fluid secretions. The young leaf buds are strongly purgative; and act with violence.

An ointment for burns is formed of elder bark. Elder flowers in decoction is very useful in erysipelatous fevers.

Dwarf Elder. *Sambucus Ebulus.*

It rises two or three feet in height, is herb-like, erect and prickly; leaves opposite, pinnated, composed of four or five pair, with an odd one at the extremity; flowers, terminal, umbelliferous, in scattered shafts; the fruit is a round, black, single celled berry, containing three irregular shaped seed. It grows in hedges and along road sides in almost every part of America.

The juice, and decoction of the roots has been found most efficacious in curing dropsies. It is a powerful hydragogue, or water purge. A gill of the juice of the inner green bark works powerfully both upwards and downwards, and has frequently cured dropsies. For common use in the dropsy, two ounces of the dried root may be boiled to a quart, and a gill taken morning and night. One ounce of the inner green bark, dried, and one of the dry roots, may be boiled to two quarts; a tea cupful taken three times a day works powerfully as a diuretic, and is good in suppression of the urine.

Elecampane. *Inula Helenium.* The root.

This is a very large, downy, perrennial plant, found in rich cultivated soil, or by the road sides: a number of large leaves rise annually from the root, from the centre of which rises a stalk three or four feet high, bearing leaves all the way up, which are smallest at the top; has many branches, producing large yellow flowers, somewhat in the form of a sun-flower. The root is white, with prongs running deep into the ground. Its taste on first chewing, is glutinous and somewhat rancid, quickly succeeded by an aromatic bitterness and pungency.

This root is an excellent pectoral, and is beneficial in coughs; it is also detergent, attenuant, laxative, stomachic, diuretic and diaphoretic. It attenuates viscid phlegm, relieves humoral coughs and asthmas, excites urine and insensible perspiration, gently loosens the bowels, strengthens the stomach, and the tone of the viscera in general.

It may be taken alone, in powder or decoction, or it may be combined with other articles and formed into a syrup, for all the above diseases. A tea spoonful of the pulverized root may be taken three times a day, in molasses, together with a tea cupful of a decoction of one pound of the dried root boiled to three quarts, taken night and morning.

Elecampane, comfrey, and slippery elm boiled to a syrup and mixed with honey, and taken freely three or four times a day, is an excellent remedy for coughs.

Slippery Elm. *Ulmus Dulcis.* The inner bark.

This is a large tree, and is well known, growing throughout the United States.

Slippery elm bark taken continually in decoction, has been found very effectual in the cure of scorbutic and herpetic eruptions, whites, gleets, clap, ulcers, &c. and is one of the best poultices for fresh wounds, burns, scalds, bruises, and ulcers, that can be applied. The surgeons in the revolutionary army experienced the most happy effects from its application to gunshot wounds, which were soon brought to a good suppuration and a disposition to heal. It was applied as the first remedy. When tendency to mortification was evident, this bark, bruised and boiled in water, produced the most surprising good effects. In old ill conditioned ulcers, equal benefit was derived from it. The infusion of the bark was used with advantage as a diet drink in pleurisy and catarrh, and also in diarrhœa and dysentery.

Its constant use is very proper for pregnant women during the seventh month, as it facilitates the birth and causes a speedy and easy delivery.

Ergot, or Spurred Rye. *Secale Cereale.*

Ergot is a powerful emmenagogue, exciting a specific action upon the womb, and capable of producing abortion at any stage of pregnancy. It is very frequently, and in most cases, I believe, very erroneously, employed to excite *forcible* pains in delivery, even when there is no necessity for it, which cannot but injure the woman. From five to ten or fifteen grains of the powder may be taken at a dose; but it is more active in decoction, half a drachm of the powder being gently boiled in half a pint of water, one third may be given every twenty minutes, until proper pains have commenced. A large dose will excite nausea and vomiting.

Eryngo, or Sea Holly. *Eryngium Maritimum.* The root.

This shrub grows along the sea coast; rises from one to two feet high; leaves circular, plaited, firm, of a pale blue color, and marked with white veins; flowers blue, and terminate the branches in round heads: flowers from August to September.

The root is aromatic, expectorant, corroborant, and stimulant; and has been found beneficial in debilitated, consumptive patients; it invigorates the system, and excites to venery. It may be prepared as follows: boil two ounces of shavings of deer's horns, in two quarts of barley water, to one quart; then add four ounces of eryngo root, and a quart of new milk, and boil it down to three pints; strain it for use. In consumptive debilitated habits, the patient may take a dish of this three or four times a day, which will invigorate the system, and restore natural spirits.

Feverfew. *Matricaria Vulgaris.* The leaves and flowers.

This plant grows chiefly in gardens, and is so well known as to need no description. It is sometimes misnamed featherfew.

Both the wild and garden feverfew have the same virtues. They are warm, aperient, carminative, bitter, and strengthen the stomach, expels wind, promotes the menses, destroys worms, and is beneficial in hysterical complaints and lowness of spirits. For a decoction, pour two quarts of boiling water on two handsful of the leaves, of which a tea cupful may be taken three or four times a day, in order to promote the menses; the same may be taken in colds and fevers. In hysterical complaints, a tea spoonful of the compound spirit of lavender may be added to the above decoction.

Fever Bush, or Spice Bush. *Dumus Febris.* The bark.

This bush grows along the sides of low moist meadows, and in wet swamps. It rises five or six feet high; leaves ovate and numerous; blossoms of a pale reddish color; berries blood red, and of a fragrant aromatic smell.

The bark, in decoction, is cooling and cordial, and is exceedingly useful in all kinds of fevers for allaying the heat and relieving the system. After proper evacuations, it may be given with advantage in all kinds of fevers and inflammations as a common drink. I make great use of it for these purposes. It is used by the Indians in all inflammatory complaints, and is much esteemed by the country people for the same purpose.

Male Fern. *Polypodium Felix Mas.* The root.

This plant grows on the mountains and among the rocks, in New-Jersey, and other parts of the United States. The leaves are fan-like, shoot from the root, curl round in their young state, and afterwards extend themselves three or four feet. The leaves spread wider than the female fern. The root, when chewed is somewhat mucilaginous and sweet, and afterwards astringent and bitter.

The root of this plant has been found a powerful remedy for worms, especially the tapeworm. This is the famous remedy of Madame Nouffler, of Switzerland, for the tapeworm. She acquired

the knowledge of it from her husband, who was a surgeon, and obtained a great price for the secret from Louis XV. of France, by whose order it was published. The powdered plant was generally preferred by Madame N. and may be given in doses of from sixty grains to two drachms. It may also be taken in decoction, and drank freely, day after day, giving a purge of blue flag, or mandrake, to finish the operation.

Another method of administering it is, the day previous to taking the powder, to give a smart purge, as of blue flag, and after its operation to take a light supper. The next morning give three drachms of the powdered fern root, and two hours afterwards another dose of the blue flag, and drink a tea cupful of the skunk cabbage root decoction every hour till the tapeworm is expelled: taking care to sit on a close stool, and not break the worm, but pull it gently. In case the worm is not expelled the first day, the medicine is to be repeated the next. The worm has been destroyed by a drachm of the powder, without any purge.

Flax. *Linum Usitatissimum.* The seeds and their oil.

Flaxseed is emollient and demulcent, and is used in poultices. The infusion or tea, is a good pectoral, and when sweetened with honey, is very proper in heat of urine, recent coughs and rheums, and diseases of the breast and lungs.

Five Finger, or Cinquefoil. *Potentilla Reptans.* The leaves and root.

The stalks of this grass, trail along the ground with long slender strings like strawberries; each stem has five leaves, placed together, of unequal size, obtuse, serrated and veined; flowers yellow, and the root small. It grows by road sides, on meadow banks, and waste grounds.

The root is a gentle astringent, and has been found by experience to be very beneficial in fevers, and particularly when there is great debility, lassitude and night sweats, which last it seldom fails to check; it also helps the appetite. It is taken in decoction, or it may be boiled with milk. It is serviceable in allaying fluxes, immoderate flow of the menses, &c.

Foxglove. *Digitalis Purpuera.* The leaves.

This elegant plant, is indigenous, biennial, very common on hedge banks and sides of hills, in dry, gravelly, or sandy soils, and the beauty of its appearance, gained it a place in gardens. The stalk is erect, tapering, and four feet in height; leaves large, oval, wrinkled, veined, on short winged foot-stalks, downy underneath; the flowers, always on one side are purple, bell-shaped, marked internally with little dark colored spots placed in whitish rings, and long hairs de-

fend the entrance of the tube; hence no insects ever approach this flower.

This is a powerful medicine, and may be employed to subserve many valuable purposes. Its effects when swallowed are: to diminish the irritability of the system; to increase the action of the absorbents, and to increase the discharge by urine. In excessive doses it produces vomiting, purging, dimness of the sight, vertigo, delirium, hiccup, convulsions, and death. For these the best remedies are cordials and stimulants.

Internally, digatalis has been recommended in inflammatory diseases, (from its remarkable power of diminishing the velocity of the circulation,) in hemorrhages, spasmodic affections, as asthma, palpitations, in madness, dropsy, scrofula, gonorrhœa, and aneurism. Externally it has been applied to scrofulous tumors.

It may be exhibited in substance, either by itself or conjoined with some aromatic, or made into pills with balsam of fir, or with soap and gum ammoniac. Of the powder may be given, at first, one grain twice a day, gradually increasing the dose till it acts upon the pulse, kidneys, stomach and bowels, when its use may be suspended. It may also be given in infusion: a drachm of the dried leaves may be infused four hours in four ounces of hot water, adding an ounce of spirits to preserve it. Half an ounce of this infusion may be taken twice a day. For a decoction, four ounces of the fresh leaves may be boiled from two pounds of water to one, and half an ounce of the strained liquor taken every two hours till four are taken. For a tincture, put one ounce of the dried pulverized leaves into four ounces of fourth proof spirits, and let it stand in a warm place forty-eight hours, frequently shaking it up: this when strained, forms a saturated tincture, of which twenty drops may be taken twice or thrice a day.

Digitalis, though one of the most powerful narcotics, acts likewise as one of the most certain diuretics, in dropsy, apparently from its power of promoting absorption. It has frequently succeeded where other diuretics have failed. In this disease, it is best given in substance.

For relieving the scalding in gonorrhœa, and assisting in the cure, it may be pilled with balsam of fir, which is very convenient and appropriate.

Frostwort. *Cistus Canadensis.* The leaves.

This plant rises two feet high; leaves numerous, ovate, very small, and of a whitish color, like frost, and grows on small purple stalks; flowers of a pale color and inconspicuous, which terminate in a small pod containing very small seed. It is newly discovered, and grows in the woods on Long Island, and plentifully in New Jersey, and is known by the name of Frostwort, from its color.

It has been found effectual in the cure of scrofula or king's evil. For the cure of this disease, let the patient drink of the following infusion three times a day; put four ounces of the dry leaves into a tea pot filled with boiling water: and wash the sores with the same. For an external application to the tumors, take one handful of the dry leaves, a quart of rum, and a table spoonful of black pepper; set

this on hot embers for two hours to simmer; strain it, and add a handful or two more of the leaves, and simmer it again for half an hour; then thicken it by stirring in two ounces of the powdered leaves, and apply it as a poultice over the scrofulous tumors twice a day.—This treatment has cured many in this city.

Fennel. The seeds.

Fennel is a cultivated plant, and is an excellent aromatic and carminative, similar to caraway, dill, &c. The seeds, taken in substance or boiled in milk, are beneficial in removing visceral obstructions.

Fumitory. *Fumaria Officinalis.* The leaves.

This plant rises a foot high; leaves pale green, compound, doubly pinnated; flowers of a reddish purple, and grow in spikes, which arise from the axilla of the leaves. It grows common in cornfields, and by the side of fences.

Fumitory is a tonic bitter, and antiscorbutic, and has been found efficacious in the cure of leprosy and other cutaneous eruptions.—For these purposes it should be drank freely in decoction. Two ounces of the flowers and tops infused in three pints of Madeira wine, and a wine glass taken twice a day, will strengthen the stomach and create a good appetite.

Galbanum. *The gum resin.*

This is a foreign drug, a native of Africa, and comes in pale colored pieces, about the size of a hazle nut. Proof spirit dissolves it entirely, the impurities excepted.

Galbanum possesses the virtues of the fœtid gums, and is used for the same purposes; dose from ten grains to a drachm. It is chiefly employed in the form of a plaster to white swellings, and is supposed to resolve and discuss tumors, and promote suppuration. In hysteric spasms and inflamed piles, an application of a tincture from this gum affords very effectual relief; but in the latter case, the painful parts ought to be covered with linen rags moistened in lime-water, before the tincture is dropped upon them.

Gall Nut. *Quercus Cerris.*

This is an excrescence growing on the Oriental oak, found in the warm countries of Europe.

Galls have an austere styptic taste, without any smell; and are one of the most powerful astringents known. It is said that, by their internal use, in doses of half a drachm of the powder, intermittent fevers have been cured, when Peruvian bark failed. An infusion or decoction of the galls may be used with advantage as an astringent

gargle; and an ointment of the finely powdered galls is used with success in the piles.

Gamboge. *Gambogia.* A Gum Resin.

A vegetable juice of a resinous nature, imported from the East Indies. The best sort is of a deep yellow color, divested of all smell, and has very little taste.

It is a violent cathartic, operating both upwards and downwards. It has been used in dropsies, in small nauseating doses, as a water purge, and will often bring away large quantities of water. Gamboge is also recommended to be taken for the tape worm, in doses of fifteen grains, early in the morning; and if the worm be not expelled in two or three hours, this powerful dose is said to have been repeated with safety and success, even to the third time. From two to four grains is a common cathartic dose. Great precaution, however, is requisite in the use of this precarious and active medicine. If too large a dose should be accidentally swallowed, the most effectual antidote will be copious draughts of a solution of pearlashes in water.

Garden Peony. *Pæonia Officinalis.* The root.

This plant has been introduced into many American gardens, from Europe. Rises two feet high; leaves cut into lobes, which are oblong and pinnated; flowers large, and red.

It is noted for its virtues in the cure of epilepsy, and fits in children. The roots must be dug in March, dried, pulverized and kept in bottles. Adults subject to the epilepsy, may take a desert spoonful of the powder four times a day, in a tea cupful of bittersweet tea, also apply the bruised roots to the soles of the feet when going to bed.

Garlic. *Allium Sativum.* The root.

Garlic is a perrennial, bulbous rooted plant, all the parts of which, especially the roots, have a strong, offensive, very penetrating and diffusive smell, and an acrimonious taste. It is a powerful and diffusive stimulant; hence in cold phlegmatic habits, catarrhous disorders of the breast, asthma, both pituitous and spasmodic, flatulent colics, hysterical and other diseases proceeding from laxity of the solids, garlic is eminently serviceable, proving expectorant, diuretic, and if the patient be kept warm, sudorific. Sydenham extols it in dropsy and assures us also, that among all the substances which occasion a derivation or revulsion from the head, no one operates more powerfully than garlic applied to the soles of the feet.

Garlic may be exhibited in substance, several cloves of it cut into slices, may be swallowed without chewing. In this manner it has been successfully used in the cure of dropsy, and intermittent fevers: it may also be administered in the form of bolus or pills. Cotton moistened with the juice and introduced into the ear five or six times a

day, has afforded relief in deafness coming from decay, or rheumatism. In the form of ointment applied externally, garlic is said to resolve and discuss indolent tumors; and when applied under the form of a poultice to the pubes, it relieves spasms upon the urinary passages, and promotes the discharge of urine, when it is obstructed.

Gentian. *Gentiana Americana.* The root.

There are many species of gentian scattered throughout the United States, in great abundance. Some have blue flowers, others yellow. Some are known by the names of blue gentian, bitter root, blue bells, &c. All our gentians are autumnal plants, blossoming very late, from September to November. They are all ornamental and would adorn a garden, and are more or less bitter in the roots and leaves.

The species here described rises two or three feet in height; the stem strong, smooth and erect; the leaves which arise from the lower part of the stem, are spear-shaped, large ribs, and rough; those from the upper part are more ovate, smooth, and sessile; large yellow flowers, produced in whorls, which terminate in yellow bitter berries, which grow along the stalks. It is perrennial, and grows on the sides of roads, and in waste pastures.

The root possesses the general virtues of bitters in an eminent degree, and is wholly devoid of astringency. It is tonic, antiseptic, and in large doses, cathartic, and sudorific. It invigorates the stomach, and is very useful in debility of the digestive organs; it increases the appetite, prevents the acidification of food, enables the stomach to bear and digest solid food, and thus cures indigestion and dyspepsia. It enters into most of the digestive pills and preparations Compounded with astringents, it cures intermittents more sure than the Peruvian bark. It is much used in the southern states, in hectic and nervous fevers, inflammation of the lungs, &c. acting as a sudorific tonic. It may be used in general debility. The dose is, in substance, ten to forty grains of the powdered root; but it is more frequently taken in tincture or wine.

Gingseng. *Panax Quinquefolium.* The root.

This plant rises a foot in height; the leaves rise with the flower-stalk from a thick joint in the stem, and have the appearance, from their disposition of being one digistated leaf, on short purple foot-stalks, all fixed to a common petiole, smooth, serrated, and pointed. Flowers forming a small round umbel. It is perrennial, and grows abundantly on the sides of mountains and in rich soils, in most parts of the United States, and particularly in the rich western states. It flowers in July, and has blackish berries; the root is about the thickness of the little finger, two inches long, of a whitish yellow color, and wrinkled on the surface. It has an agreeable, sweetish taste, but no smell.

This root is good in gravel and all debilitated habits, creates a

good apetite, invigorates the system, and is an excellent restorative to those fatigued by travelling. A pound of the fresh roots, bruised, infused in a gallon of old Jamaica spirits for ten or twelve days, may be taken in a dose of a wine glassful three times a day, on an empty stomach. This will be found beneficial in all weaknesses from excessive venery, pain in the bones from colds, and in gravelly complaints.

Ginger. *Amonum Zingiber.* The root.

Ginger root is imported from the East and West Indies. It is in small wrinkled pieces, of a grayish color, having an aromatic, odor, and a very pungent taste.

The root is frequently employed as a grateful and moderately powerful aromatic, either in combination with other remedies, or by itself, as a stimulant, particularly in dyspepsia, flatulence, tympanites, and gout. The spicy root is more immediately serviceable in cold flatulent colics; in laxity and debility of the stomach and intestines, and especially in torpid phlegmatic constitutions, in order to induce a more brisk action of the vessels.

Golden Rod. *Solidago Virga Aurea.* The leaves and flowers.

Grows in woods and meadows, and along fences, in most parts of the United States; perrennial, and rises about two feet in height; small brown round stalks, divided at the top into small branches, with many long green leaves; flowers small and yellow, on every one of the branches, all of which are turned one way, and when ripe they become as down, and are carried away by the wind. It flowers in July.

The flowers are aperient and corroborant, and the leaves are gently astringent. The flowers have been found beneficial in removing obstructions of the urinary organs, in gravelly complaints, ulcerations of the bladder, is good in vitiation of the humors, and in the first stage of dropsies. The leaves are good in debility, and laxity of the viscera or bowels, and all disorders proceeding from that cause. They may be taken in infusion, or decoction.

Goldthread. *Coptis Trifolia.* The root.

Is found plentifully in New York, and all the eastern states, most commonly in mossy swamps, and evergreen woods. The root is creeping, thread-like, of a bright yellow, with many small fibres; leaves radical, evergreen, on long slender petioles, three on a stem; flowers white. The plant itself has the appearance of the strawberry vine.

It is a pure intense bitter, without smell, or astringency; is tonic, stomachic, promoting digestion, useful in dyspepsia, debility, after fevers, and whenever a pure bitter is required. A tincture made with an ounce of the roots in a pound of diluted alcohol, is recommended in doses of a tea spoonful thrice a day; or ten or twenty grains of the powders; both agree with the stomach.

But the principal use made of this root by the country people, is for a gargle in ulcerations of the mouth, particularly in children, for which purpose it is much esteemed.

Golden Seal. *Hydrastis Canadensis.* The root.

Grows on rich, moist land; has a stem ten or twelve inches high, and often but one leaf, of an olive green color; there are sometimes two leaves, and on one of them is a kind of seed, or seal, which is red. The root is crooked, knobby, wrinkled, with many long fibres, and of a bright yellow. It is found from Canada to Tennessee. Taste exceedingly bitter.

It is sometimes known by the names of yellow root, ground raspberry, yellow paint, yellow eye root, Indian paint, orange root.

It is an estimable tonic, and at the same time laxative, which makes it very appropriate in dyspeptic disorders: also opthalmic, detergent, and stimulant. The plant is much used in the western states for diseases of the eyes, the juice or infusion are used as a wash, in sore or inflamed eyes. It is considered a specific by the Indians for that disorder; they also employ it for sore legs, and many external complaints, as a topical tonic. Internally, it is used as a bitter tonic, in infusion or tincture, in disorders of the stomach, *bile*, and liver. A half ounce of the dried pulverized roots, is sufficient to infuse in a quart of spirits.

This root appears also to be slightly narcotic, and is said to enter into many of the compounded remedies for cancer. Some Indians employ it as a diuretic, stimulant and escharotic, using the powder for blistering, and the infusion for the dropsy.

Golden seal bitters forms one of the best correctives of bile, and bilious habits, that can be given.

Gooseberry. Bark of the root.

The bark of gooseberry roots, in decoction, is considerably diuretic, and is said to have cured the gravel. Black currant root bark possesses the same qualities.

Ground Ivy. *Glecoma Hederacea.* The leaves.

The leaves of this plant are scalloped, hairy, in opposite pairs, having long petioles, which are channelled; flowers in whorls, of a bluish color, on short stems. This plant grows about garden fences, and on the sides of moist meadows, and runs along under the hedges.

It purifies the blood, is a good pectoral, and the expressed juice snuffed up the nose, has cured the most inveterate headach. It is good in consumption and obstructions, laxity and debility of the viscera, for cleansing and healing ulcers in the lungs, kidneys, and other internal parts, and is an efficacious remedy in jaundice and asthmatic coughs.

A gill of the expressed juice of the green leaves, morning and night, in a half pint of wild cherry bark tea, may be taken.

Stinking Goosefoot. *Chenopodium Fœtidum.*

This plant rises near a foot in height; leaves numerous, mealy, and alternate; flowers small and inconspicuous, of a light green, and placed in clusters, but has no seed vessel. It grows near old walls, old ruins, dunghills, &c. flowers in August, and in its fresh state has the smell of putrid salt fish.

The green leaves are excellent medicine in hysteric and spasmodic complaints. In all hysteric fits, give the patient a tea spoonful of the juice, or two tea spoonsful of the dried leaves, in a little peppermint or pennyroyal water, every two hours, which generally gives immediate relief, quicker and more effectual than assafœtida.

Guaiacum. The wood and resin.

Guaiacum, or lignum vitæ, is a native of the West Indies. The wood and gum are the parts used in medicine. The wood is hard and heavy, of a yellow color, has little smell and a moderately bitter taste. Gum guaiacum is of a friable nature, of a deep greenish color, and sometimes of a reddish hue, and has a pungent acrid taste.

The general virtues of guaiacum are those of warm aromatic medicine; it strengthens the stomach and other viscera, and greatly promotes the discharge of urine and perspiration. Hence it is of especial service in cutaneous eruptions, and disorders arising from obstructions of the excretory glands; in rheumatic, and mercurial pains, it has often afforded considerable relief. It was at one time supposed to be a radical cure for the syphilis, but alone, it is not to be depended on, though it forms a valuable adjunct to other remedies for that disease, and enters into most of the syrups and preparations used in it. The gum is likewise a good laxative: when dissolved in rum, or combined with water by means of mucilage, or the yolk of an egg, or in the form of tincture or elixir, it has been found useful in chronic rheumatism, or even in such wandering pains of the stomach and other parts of the body as could be attributed to the retrocedent gout.

The form in which guaiacum wood is administered is always that of a decoction. A quart of it is drunk in the course of a day. If taken warm it produces sweat.

Gum Arabic.

This, the purest of the gums, is obtained by spontaneous exudation from the mimosa tree. It is in small irregular pieces, white or yellowish, semi-pellucid, without taste or smell. It has all the properties of gum; is insoluble in alcohol or oils, and soluble in water, forming a viscid solution, termed mucilage.

Gum arabic is used as a demulcent. It is useful in dysentery, diarrhœa, strangury and heat of urine, when it should be given in solution. It forms an excellent basis for all cough mixtures. In pharmacy, mucilage of gum arabic is employed for a variety of pur-

poses. It serves to suspend heavy powders in water, gives tenacity to substances made into pills, and it effects a partial union of oils, balsams, and resins, with water.

Gum Tragacanth.

Is the product of a very thorny shrub, which grows on the island of Candia and some other places in the Levant. It comes in small wrinkled pieces, semi-transparent, and brittle; has neither taste nor smell, and is entirely a pure gum. It is greatly superior to all the gums in giving viscidity to water, its power in this respect being to that of gum arabic as twenty-four to one. Its solution is not perfectly uniform unless boiled for some time.

Tragacanth has virtues similar to gum arabic, and is principally employed as a demulcent, to blunt acrimonies, and as a pharmaceutic agent.

Hart's Tongue. *Asplenium Scolopendium.* The leaves.

The leaves of this plant are long, tongue-shaped, entire, pointed, on radical foot-stalks, of a shining black color, and waved at the margin. It grows among the rocks in shady places.

It has an astringent quality, and when made into an ointment, is beneficial in curing burns and the piles; and when taken internally infused in wine, prevents the spitting of blood, and is effectual in the cure of the diarrhœa and dysentery. It may be administered in decoction, in wine; or made into an ointment with linseed oil and mutton suet.

White Hellebore. *Veratrum Album* The root.

This plant rises three feet in height; leaves large, oval, ribbed, entire, plaited, and sessile; flowers bisexual, and of a greenish color, on long terminal spikes. It grows in moist meadows, in swamps, and on the sides of stony running brooks, and is one of the first plants we discover in the spring, throughout the northern states, and is equally as efficacious in medicine as those imported: flowers in July.

The root only is made use of for medical purposes. They must be dug in the spring, or late in the fall, when the leaves are dead, and ground in a mill, for use. The root has a strong, disagreeable smell when fresh, which is lost by drying and an acrid taste which is retained. Snuffed up the nostrils in very small quantities, it excites violent sneezing, with a sense of heat and a copious discharge of mucus, which renders it useful in catarrhs, headachs, mania, &c. Taken internally in doses of a few grains, it acts as a violent emetic and cathartic. Externally, mixed with lard, it is said to be an infalliable cure for the itch and scald head.

Dr. Henry formed an ointment of it by mixing it with mutton gravy; for use in cutaneous affections.

Black Hellebore. *Helleborus Nigrus.* The root.

This species has fair green leaves, arising from the root, divided into seven, eight, or nine parts, and remaining green all winter. About Christmas time, if the weather be temperate, the flowers appear upon foot-stalks, consisting of five large, round white leaves, which are sometimes purple towards the edges. It generally is found among mountains. The root of this plant consists externally of small fibres, attached to one head; externally dark colored, internally white.

Black hellebore root is a very violent cathartic, in doses from ten to twenty grains; so violent, indeed, that it is seldom used. On its cathartic power probably depends any advantage that may be derived from its administration in mania and melancholy, in which diseases it was highly celebrated by the ancients. In dropsy it has been employed as a hydragogue cathartic. It is said a pessary of this root will bring on the menses.

Stinking Hellebore, or Bear's Foot. The leaves.

This species is a native of England, and grows in shady places and under hedges. The leaves have a bitter, nauseous taste, and unpleasant smell. When dried they are frequently given as a domestic medicine to destroy worms but they must be used sparingly, being so violent in their operation, that instances of their fatal effects have been recorded. Snuffed up the nostrils in very small quantity it excites violent sneezing, and a copious discharge. Internally, in doses of a few grains, it operates powerfully as an emetic. Externally, with lard it is used as an application in some cutaneous disorders.

Hogweed, or Hogbed. *Ambrosia.* The herb.

This curious plant rises about three inches in height, forming a bed: the leaves spring out from a long reddish tendril, like a vine, and are of a deep green color, small and curly. It is an evergreen, and grows chiefly near farm yards, on stony soil, and in mucky swamps. The hogs delight to make their bed on it, from whence its name.

This plant is well known by the women in the country, who always find it effectual in bringing down obstructed courses. It may be used in strong decoction, with a little rum added.

Hoarhound. *Marrubium Vulgare.* The herb.

This common useful plant rises about a foot in height; leaves deeply serrated, veined, wrinkled, hoary, in pairs, and standing on long foot stalks; flowers white, and in whorls. It is perrennial, and grows wild along the road sides, &c. in abundance throughout the United States.

The leaves are aperient and deobstruent; they promote the fluid secretions in general, and drank freely, obviate costiveness, are beneficial in moist asthmas, coughs, yellow jaundice, cachexy, menstrual obstructions, dropsy, and are good to destroy worms. An infusion of the leaves is good to carry off a salivation. In these complaints the patient may take a gill of the expressed juice every morning fasting, in half a pint of fresh new milk: or its equivalent in decoction, or powder.

Hop. *Humulus Lupulus.* The flower.

Description is unnecessary. It is an agreeable bitter, anodyne, diuretic remedy, though its virtues are not properly appreciated. The extract or tincture of hops may be advantageously substituted for opium in most cases, as it possesses its anodyne qualities, without the narcotic, and it may be given in many cases where opium cannot be employed. In consumptions, particularly, it is preferable, as it gives ease, without any deleterious effects. It has been employed with success in jaundice, indigestion, hypochondriac passions, venereal, worms, &c.

Another very useful purpose for which hops may be employed, is for fomentations in inflammatory fevers, especially in pleurisies, where they give the most agreeable relief. A pillow filled with the flowers, and laid beneath the head, has been found to promote sleep in patients afflicted with delirious fevers.

The extract of hops is made by boiling the strength to a thin syrup, and then evaporating it till it becomes thick, when it should be put in a pot, and covered with alcohol to prevent its moulding: dose from five to ten grains, in pills, to be taken three times a day, fasting.

It is said the Spaniards boil a pound of the hop roots in four quarts of water down to six pints, and drink half a pint, warm in the morning when in bed, to cure the venereal.

Hardhack. *Collinsonia.* The root.

Also called ox balm, horseweed, stoneroot, healall, knotroot, richweed.

This plant rises with a straight stem about two feet high: only two or three pairs of large thin leaves, on long footstalks, heart-shaped and pointed; flowers yellowish, on long leafless spires; root knotty, flat, and hard as a stone. It is found from Canada to Carolina, generally in rich valleys, and very common in Pennsylvania and New-York. The whole plant has a strong balsamic smell, and affords by distillation, an essential oil possessing the same smell. The taste is pungent and warm.

Hardhack is healing, corroborant, carminative, subtonic, diuretic, and a warm stimulant. It is one of the plants called *healall*, in the United States, because they cure sores and wounds; the Indians employ this plant for that purpose. In the mountains and hills of

Virginia, Kentucky, Tennessee and Carolina, this genus is considered as a panacea, and used outwardly and inwardly in many disorders. It is applied in poultice and wash for bruises, sores, blows, falls, wounds, sprains, contusions, and taken like tea for headachs, colics, cramps, dropsy, indigestion. The whole plants are used both fresh and dry; they are also employed for the sore backs of horses. There are many species of this plant, but their virtues are all similar.

The root should be dug in the spring, cut into thin slices, and dried sufficiently over a slow fire for pulverization, when it should be bottled up for use. It may be administered in powder or decoction. A tea spoonful of the powder may be taken four or five times a day.

Heart's-Ease.

What is commonly known as heart's-ease, in this country, resembles arse-smart, only growing much larger, and has a black spot in the shape of a heart on its leaves.

Its properties are similar to those of arse-smart, except that they are much milder, and therefore more applicable to general use. It makes an excellent fomentation for all inflamed and foul ulcers, particularly if boiled with urine. Taken in decoction, it is an excellent remedy for the asthma, and taken freely, excites perspiration, breaking up fevers, colds, &c.

Hemlock Tree. The boughs.

The boughs of this well known tree may be employed with advantage for fomentations and sweating in colds, rheumatism, fevers, &c. I have known many lives saved during an epidemic fever, by giving the decoction internally, and fomenting externally. The oil is also used in colds and coughs.

Horse Radish. *Cochlearia Armoracia.* The root.

Is well known, chiefly cultivated in gardens, and grows wild in wet grounds, and about old ruins.

The medicinal effects of this root are to stimulate the solids, and promote the fluid secretions; it seems to extend its action throughout the whole habit, and affects the minutest glands. It is greatly recommended in dropsies, particularly those that succeed fevers; when it should not only be taken internally, but applied to the feet, and elsewhere, to quicken the action of the vessels. In paralytic complaints, horse radish has often been applied with advantage to the affected parts, as a stimulating remedy. Horse radish has been found beneficial in chronic rheumatism, asthma, and all diseases of debility and torpidity of the blood; and should be eaten freely with the food. When steeped in vinegar during a fortnight, it is said effectually to remove freckles on the face. A syrup made by boiling

scraped horse radish in brown sugar, is an excellent remedy in the decline of colds and pleurisies, to promote expectoration and remove hoarseness.

High Cranberry, or Crampbark. The bark.

Grows in swamps, from six to ten feet high, shrub like, leaves resemble a goose's foot; flowers white, in clusters, berries in clusters, turn red after frost comes, and remain through the winter. The berries strongly acid, and the bark bitter.

Crampbark, is a powerful antispasmodic, and is very effectual in relaxing cramps and spasms of all kinds. A tincture of it may be made in wine by infusing an ounce of the dried pulverized bark in a quart of wine: dose a wine glass twice a day. A decoction answers the same purpose, and may be most convenient in cases of emergency.

Hyssop. The herb.

The leaves of hyssop have an aromatic smell, and a warm, pungent taste; they are particularly recommended in humoral asthma, coughs, and other disorders of the breast and lungs; being supposed greatly to promote expectoration. The leaves are of great service when applied in cataplasms to bruises, the pain of which they speedily mitigate, and at the same time disperse every spot or mark from the part affected.

Iceland Moss. *Lichen Icelandicus.*

This is very common in Iceland, but also grows in abundance in the northern and mountainous parts of the United States. This lichen is foliaceous, tough, variously divided into blunt lobes, turning in at the edges, and fringed with short strong bristles. The shields are large, and of a reddish brown color on the lobes of the leaves. It grows on trees and rocks.

Iceland moss has of late become quite popular as a remedy for consumption, and although its virtues have been considerably overrated, it is undoubtedly a valuable medicine in pulmonary affections. It is extremely mucilaginous, and to the taste is bitter and somewhat astringent; its bitterness, as well as the purgative quality it possesses, when fresh, are in a great measure dissipated by drying, so that the inhabitants convert it into a tolerably pleasant food. An ounce of this moss boiled a quarter of an hour in a pint of water, yields seven ounces of a mucilage as thick as that procured by the solution of one pint of gum arabic in three of water.

Prepared in a syrup, it is an efficacious remedy in consumptions, coughs, dysenteries, and diarrhœas. In dysentery, particularly, it is very successful, after cathartics and emetics, and it may be conjoined with opium. For a decoction, an ounce and a half may be boiled for a quarter of an hour in a quart of milk, of which a tea cup-

ful may be drank frequently in the course of the day. If the milk disagree with the stomach, a simple decoction, or syrup may be used. It is sometimes combined with hyssop, hoarhound, wild cherry, and butternut bark, and made in a syrup.

Ice Plant. *Erystallinum.* The root.

This plant rises about six inches in height, is white, pellucid, and so tender, that when handled it dissolves and melts like ice in the hand; the stalks and leaves are like frozen jelly. It grows in the woods in New Jersey, and many other parts of the United States, and is found in September, as white as snow.

The root has been found to be almost an infallible remedy for fits in children, and is called fit root by the people in the country. In some parts they dilute the juice in cold water, as a remedy for sore eyes. The root should be dried, pulverized, and bottled up. Children troubled with fits may take from half a tea spoonful to a whole one, three mornings, both before the full and change of the moon, in a tea cupful of peony root; or in valerian tea for epilepsy in adults. The expressed juice mixed with rose water, will cure the most inveterate inflammations of the eyes; observing such other evacuations as are necessary.

Indian Hemp. *Spirea Trifoliata..* The bark of the root.

Sometimes called wild buckwheat. It rises three feet high; the stalk is bare for a foot, then throws out many branches; leaves numerous and ovate; flowers whitish, similar to buckwheat, which, terminate in seed pods resembling a cucumber. It is perrennial, and grows in meadows and low woods in most parts of the United States.

This useful plant is emetic, cathartic, sudorific, diuretic, and is an excellent pectoral; and has been found beneficial in curing rheumatisms, dropsies, and asthmatic coughs. The part used is the bark of the root, which should be obtained in April, dried and pulverized. From thirty to thirty-five grains will generally operate both up and down, which may be used as an emetic in intermittents. As a sudorific, six grains may be taken twice a day in a spoonful of cold water. As a pectoral it may be combined with skunk cabbage.

For rheumatisms, and immoderate flow of the menses, it may be taken in small doses in prickly ash tea. A spoonful of the infusion taken occasionally, is good in whooping cough, and prevents straining.

Indian hemp possesses considerable power as a vermifuge. There are several species in different parts of the United States, which are known by different names, as Indian physic, ipecac, dropwort, bowman's root, &c. They all possess similar qualities, though variant in strength.

Indian Physic. *Gillenia Stipulacea.* The root.

This belongs to the same class as the preceding, and is principally

found in the states west of the Allegany, where it is known by the name of western dropwort. This species is smaller than the former.

The root is dark brown, with large and long fleshy fibres ; several stems, from two to three feet high, slender, smooth, brittle, reddish, branched ; leaves large, alternate, sessile, with three leaflets, and two large appendages ; flowers in terminal scattered shafts, and white. Roots scentless ; taste bitter.

This like the other species, is emetic, cathartic, and tonic ; but the *stip ulacea* is by far the best and strongest. This is highly esteemed and generally used in the western states. The bark of the root, which is collected in the fall, is the part principally used. The dose is from fifteen to thirty grains of the powder. It operates often as a cathartic : In small doses it becomes a tonic, and is used in intermittents.

American Ipecacuanha. The root.

Also Bowman's root's ; wild apple tree root. This is another species of the preceding class. It grows plentifully in meadows and in low woods, in the state of New Jersey.

Its qualities and doses are the same as those of the two preceding plants.

Indian Turnip. *Arum Tryphillium.* The root.

Also called dragon root, wake robin, wild turnip, &c. This valuable plant, grows in almost every part of the United States, and is known and used by most country people. The root is perrennial, round, flattened, tuberous, skin dark, loose and wrinkled. The stalk about six inches high, purple, from which grows one leaf stem, with three long, large, smooth leaves, pale beneath, with regular parallel nerves ; under these the sheath and flower appears, and afterwards the head containing the berries, which when ripe are of a bright scarlet color. It grows in meadows and swamps, and along the sides of fences and old logs.

The whole plant, and particularly the root, is violently acrid, pungent, and even caustic to the tongue, but not to the skin. It burns worse than Cayenne pepper. It is powerfully acrid, stimulant, restorative, expectorant, carminative and diaphoretic. The fresh roots are too caustic to be used internally, unless much diluted with other articles ; and when dry they loose much of their power, unless they have been dried very quick, or kept buried in sand or earth. It must be used in substance with milk, molasses, honey, or comfrey syrup, and such like, since it does not impart its pungency to any liquor ; or the fresh roots must be grated, or reduced to a pulp, with three times its weight of sugar, thus forming a conserve, which may be taken in doses of a tea spoonful three times a day, for colds, coughs, &c. In these forms it is used for flatulence, cramp in the stomach, asthmatic and consumptive affections. It quickens circulation, and is a useful stimulant in cold phlegmatic habits. It has been found beneficial in lingering decay, debilitated habits,

great prostration in typhoid fevers, deep seated rheumatic pains, or pains in the breast, chronic catarrh, &c.

Wild Indigo. *Baptista Tinctoria.* The root.

Also called, yellow indigo broom, indigo weed, horsefly weed, yellow broom, clover broom, rattle bush, &c.

The root is large and woody, blackish outside, yellowish within; stalks two or three feet high, round and smooth, yellowish green, with black dots, branches thin, with small leaves; leaves alternate, with three leaflets, sessile, of a bluish green; flowers bright yellow, in small loose spikes at the end of branches, pea-like, but smaller, succeeded by an oblong pod of a bluish black color.

This plant has the appearance of a small shrub, or broom; it dyes a kind of blue like indigo. It is often used to keep flies off from horses, as insects appear to avoid it. It is found all over the United States, in woods and on hills, and prefers dry and poor soils. The whole plant, but particularly the root, is nauseous, sub-acrid, and sub-astringent. It is active and dangerous in its fresh state, if taken internally, but loses much of action by long keeping and boiling.

Its properties are, astringent, antiseptic, febrifuge, diaphoretic, purgative, emetic, and stimulant. It is a valuable remedy for all kinds of ulcers, even the foulest, either gangrenous, eating, or syphilitic; also for almost every sore, such as malignant ulcerous sore throat, mercurial sore mouth, sore nipples, chronic sore eyes, painful acrid sores, and every ulcerous affection. It must be used externally in strong decoction as a wash, or in a fomentation; also in poultice, lard or cream.

This is one of the most powerful vegetable antiseptics in putrid disorders, and in internal mortification; it may be given internally at the dose of half an ounce of a decoction made with twenty times its weight of water. It stops gangrene, has cured scarlet fever sore throat, inverted womb, and sometimes putrid and typhus fevers.

Jerusalem Oak. *Chenopodium Anthelminticum.* The herb and seeds.

This is a small bushy plant, rising about eighteen inches in height, full of branches with few small leaves, deeply jagged on the edges, resembling the leaf of an oak, (from whence it derives its name,) which are reddish at first on the underside, and afterwards become of a yellowish green: from the middle of the branches upwards grow small yellow flowers. The whole plant has a powerful smell, and the taste is bitter, with a good deal of aromatic acrimony. The seed it produces is emphatically known by the name of *worm seed*, and it grows in most parts of the United States.

It is carminative, pectoral, antispasmodic, emmenagogue, and vermifuge. For destroying worms, the expressed juice may be used in doses of a table spoonful, for a child two or three years old;

more commonly, however, the worm seed is employed, reduced to a fine powder and mixed with syrup. Of this dose, a table spoonful may be taken every morning, for a child, keeping him without nourishment for some hours; after supper another dose is to be administered. It is sometimes necessary to coutinue this course for several days, and great numbers of round worms are frequently discharged after a few doses.

The expressed juice, mixed with honey, and taken night and morning, has been found beneficial in giving speedy relief to patients subject to asthma, wheezing, and shortness of breath. To promote the menses, a large draught of the decoction may be taken at bed time, with a spoonful of rum in it.

Juniper. *Juniperus Communis.* The berries and tops.

This is a shrub of four feet high, evergreen; leaves numerous, long, sharp pointed, of a deep green, standing three together, without foot-stalks; flowers inconspicuous. It grows in abundance in the state of New York, on the banks of rivers; flowers in June, the berries are ripe in August and have a strong pleasant smell, and a warm pungent sweet taste.

The berries and essential oil are chiefly used, and are a powerful diuretic, carminative, stimulant, diaphoretic, and are efficacious in dropsical and flatulent complaints. The berries are most commonly used in the form of infusion, to which a little gin is added as a diuretic drink in dropsy. The oil imparts its properties to ardent spirits. For wind in the bowels, three or four drops of the oil may be taken twice a day on sugar.

The peculiar flavor and well known diuretic effects of Holland gin, are owing to the oil of juniper.

John's Wort. *Hypericum Perfoliatum.* The leaves and flowers.

This plant rises two feet high, with spreading branches from the sides to the top of round, hard, upright stalks, with two small leaves set one against the other throughout, of a deep green color: flowers which stand on the heads of the branches, are yellow, five leafed, with many yellow threads in the middle, which when bruised, yield a reddish juice like blood, and produce small round heads containing the seed, which are black, and smell like resin. The root is hard, with many fibres, of a brownish color. It grows in meadows, pasture grounds, church yards, &c. and flowers the last of June.

It has been found beneficial in promoting urine, curing of ulcers, immoderate flowings of the menses, diarrhœa; removes low spirits, helps hysterical, hypochondriac, and maniacal disorders. For diarrhœa, or flux, put two ounces of the flowers in a quart of good brandy, and, after giving a dose of rhubarb, the patient may take a wine glass of the brandy night and morning, till well. It may be combined in an ointment with bitter-sweet, elder, and stramonium, for dispelling hard tumors, and caked breasts.

A tea made of this herb, relieves the lungs and breast, when respiration is obstructed, especially if joined with sage.

Jalap. *Convolulus Jalapa.* The root.

The dried root of jalap is imported from New Spain in thin transverse slices; solid and heavy, of a dark gray color. It has little smell, and a bitter taste.

Jalap is a safe and efficacious purgative, and except when given in large doses is not heating to the system. It is generally used as an adjunct to calomel. The dose of the simple powder is commonly from one to two scruples.

Kino. The gum.

This substance is the produce of Africa. It has a dark red color, and has an astringent taste, with a degree of bitterness. It is soluble in water and in alcohol.

Kino is a powerful remedy in obstinate chronic diarrhœas and dysenteries; in all passive hemorrhages, especially from the womb; in the whites; and in diseases arising from laxity of the solids. It is exhibited internally, in doses of from six to fifteen grains, in substance, or dissolved in diluted alcohol. Externally it is applied as a styptic to check bleeding from wounds, and other profuse discharges.

Lemon Tree. *Citrus Medica.* The fruit, peel, and oil.

The juice of lemons is similar to that of oranges, differing only in containing more acid.

Lemon juice is one of the most cooling and antiseptic vegetable productions, and is of great utility in medicine. It is of great efficacy in the sea scurvy; and affords a grateful and cooling beverage for febrile patients; but it should be remarked, that this acid must never be freely given to persons whose breast or respiration is affected. Saturated with common sea salt, it is recommended as possessing great efficacy in dysentery, remittent fever, the dry bellyach, putrid sore throat, and as being a specific in diabetes and lientery.

Lemon juice alone, given freely, cured a number of cases of yellow fever, when it last raged in New York.

Lemon juice is also an ingredient in many pleasant refrigerant drinks, which are of great use in allaying febrile heat and thirst, such as lemonade. The acid of lemons is a well known antidote against narcotic vegetable poisons, and among these in particular against opium.

The yellow peel is an elegant aromatic, and is frequently employed in stomachic tinctures and infusions.

WILD LETTUCE. *Lactuca Virosa.* The leaves, and extract.

This plant rises four feet high; it has three different kinds of leaves: those proceeding from the root are slightly toothed; those from the stem are cut into pinnated lobes; and others attached to the flower stalks are arrow-shaped, pointed, entire: the flowers are yellow and small. It grows wild about the hedges, rough banks, and along the sides of high meadows. The leaves are milky, and smell like opium, and resemble it in some of its effects, and its narcotic power, like that of poppy, resides in a milky juice.

An extract prepared from the expressed juice of the leaves of this plant, gathered when in flower, is recommended in small doses. In dropsies of long standing, proceeding from visceral obstructions, it has been given to the extent of half an ounce a day. It is said to agree with the stomach, to quench thirst, to be gently laxative, powerfully diuretic and, somewhat diaphoretic. Plentiful dilution is allowed during its operation. It helps its operation to take it in cohush tea.

GARDEN LETTUCE. The herb.

This plant, so valuable as an article of diet, abounds with milky juice, which possesses all the characteristic properties of the opium of the shops, and may be procured from it in sufficient quantity to repay the labor. It has been used with advantage in allaying the pain of chronic rheumatism, and colic; in checking the frequent stools accompanying diarrhœa; in allaying cough, &c.

LIFE EVERLASTING. *Gnaphaleum Polycephalum.* The herb.

Also called white balsam, Indian posey.

Grows in old fields and on dry and barren lands, from one to two feet high, with small narrow leaves; branches towards the top; flowers in a cluster, white and furzy, and continue on during the winter; it has a pleasant aromatic smell.

The blossoms chewed, and the juice swallowed, proves a sovereign remedy for most kinds of sore throat. Drank in a warm decoction produces diaphoresis in fevers; it is excellent in quinsy, weak lungs, fluor albus, consumption, &c. It forms an excellent fomentation in cases of quinsy, sore throat, pleurisy, &c.

LIFE ROOT. *Rad Vitæ.* The whole plant.

This excellent plant, but recently discovered, rises from one to two feet high; leaves on single radical leaf stems, heart-shaped, large, and serrated; flowers yellow, and the root small and fibrous. It grows on the banks of meadows, in low rich soil, and has been found in Genesee, and several other parts. It is sometimes called *wax weed.*

This valuable plant, has been found a quite certain remedy for all complaints of the gravel, and pains in the breast, beginning consumptions; is a febrifuge, and powerful diuretic, relieves melancholy and causes cheerfulness.

For the gravel, the patient may take a tea cupful three times a day, of the following tea: pour one quart of boiling water on two ounces of the dry root and leaves. In lowness of spirits, melancholy, and pain in the breast, the patient may take a tea spoonful of the powdered root three times a day, together with the tea; continuing the dose till well.

Lungwort. *Pulmonaria Officinalis.*

This is the kind of lichen, thin shell, or skin, which grows on the bark of the white oak tree, resembling the lungs, from whence it takes its name. Lungwort may be found in almost every part of the United States.

It possesses the same qualities as the Iceland moss, and other lichens; indeed, they all belong to one family, and may be used with benefit in consumptions, &c.

Liverwort. *Hepatica Triloba.*

Root perrennial, with long brown fibres; leaves radical, on long hairy stems, somewhat leathery, and stand through the winter; leaf divided into three rounded blunt lobes; flowers terminal, drooping at first, spreading when unfolded, of a pale yellow, or blue. It is found in all northern latitudes, and is common in the woods, hills, and mountains of the United States, from New England to Kentucky.

Its taste is nearly insipid, but a little astringent and mucilaginous. It is subtonic, substringent, deobstruent, pectoral, and demulcent. It was formerly used in fevers, liver complaints, indigestion, vitiation of the fluids, hypochondria, &c. It has lately been brought into notice in America, for bleeding at the lungs, consumption, coughs, &c. and is taken in the form of a strong infusion, drunk cold, or in a syrup. It is serviceable in hypochondriac complaints, in form of tea, which may be drank in any quantity. It has no effect on the lungs beyond that of a mild demulcent astringent.

Lobelia Inflata. Indian Tobacco. The herb and seeds.

This is an annual American plant, found in a great variety of soils throughout the United States. The leaves oblong, slightly serrated, sessile, alternate, on the upper surface numerous tubercles; stems branched; blossoms solitary, in a kind of spike, pale blue. Common in dry fields, and flowers in August.

The leaves, when chewed, communicate to the mouth a burning, pungent sensation, which remains long in the fauces, and occasions

a copious discharge of saliva. If they are held in the mouth for some time, they produce giddiness and pain in the head, with a trembling agitation of the whole body, and at length nausea and vomiting.

Lobelia is a prompt and thorough emetic, attended with stimulant antispasmodic effects during its operation. It vomits very kindly, without straining, and performs the work more effectually than any other medicine with which I am acquainted, especially where there is a cold slime or phlegm in the stomach, which it breaks up and removes from the bottom. It is therefore conspicuously beneficial in breaking up intermittents, and similar disorders, which are caused by the prevalence of cold phlegm in the stomach. Indeed, in all fevers requiring an evacuation of the stomach, this cannot be given amiss, and will seldom fail, when properly assisted, of removing their cause, and breaking them up in the commencement. Its value is increased in febrile complaints, by its creating a profuse perspiration, along with its emetic effect, thereby relaxing the constriction on the surface, and restoring a free circulation, so necessary and desirable.

Lobelia possesses great antispasmodic power, and has proved eminently serviceable in colics, spasms, and cramps, where emetics and antispasmodics were indicated; and it has often afforded relief in chronic rheumatism. In asthmatic affections it has manifested great efficacy in clearing the passages, and has often proved more beneficial than every other medicine in this distressing disease.

The prejudices that have been excited against this article, and the abuse which has been heaped upon it, have all arisen from ignorance of its value. None who have witnessed its effects, when properly used, can condemn it, honestly and sincerely. It is as innocent and safe as any other emetic; much more so than emetic tartar; and I think there is not much doubt but that it is more effectual than all others. From its irritating quality it cannot be dangerous, because as soon as a certain degree of irritation is produced upon the coats of the stomach, it is ejected, be the dose large or small. A distressful, sickening sensation sometimes shoots across the stomach, it is true, when lobelia has been received into it, but it is only temporary, and passes off without any ill consequences. The bug-bear stories of its mortal effects, which have been so industriously circulated by a certain class of physicians, have no foundation but in malice and vexation, and are now getting quite stale. I strongly suspect the true cause of the malignant opposition which most of the faculty have manifested to the use of lobelia, to be simply the fact, that its virtues were discovered (like those of most of the valuable medicines in use,) without the pale of their exclusiveness.

Lobelia may be administered in powder of the leaves or seeds; or in tincture of the herb. Of the pulverized seeds or leaves, a tea spoonful may be given in warm water, in two portions, the second within ten minutes after the first, whether it has operated or not. Of the saturated tincture, from one to four tea spoonfuls may be given. Plenty of diluting herb teas should be drank during the operation. The saturated tincture is obtained by putting as much of the herb in tincture as the spirits will cover.

Some physicians give Cayenne pepper, or decoctions of bayberry,

hemlock bark, &c. as a preparatory to the lobelia emetic; and it may be advantageous; but I have found it to answer the designed purposes very well without these, and therefore seldom give any thing more than some aromatic and diaphoretic herb drinks, during vomiting.

Ladies' Slipper. *Cypripedium Luteum.* The root.

Also mocasin flower, yellow umbil, male mervine, nerve root, &c. There are three or four species of ladies' slipper, as the white, red, and yellow, from the color of their flowers: but their qualities are the same.

Grows from one to two feet high, and sometimes has leaves all the way up; the flower is in the form of a purse or round bag, with a small entrance near where it joins the stalk, and is something like a mocasin, or slipper; the roots are fibrous and thickly matted together. It is common in the hills and swamps of New York, and is found throughout the United States. The roots have a pungent, mucilaginous taste, and a peculiar smell, somewhat nauseous.

Ladies' slipper root is a sedative, nervine, and antispasmodic, and a substitute for valerian in all cases. They produce beneficial effects in all nervous diseases and hysterical affections, by allaying pain, quieting the nerves and promoting sleep. It is also used in nervous headach, epilepsy, tremors, nervous fevers, &c. It is preferable to opium in most cases, having no baneful nor narcotic effects. The dose is a tea spoonful of the powder, diluted in sugar water, or any other convenient form. It may also be used in decoction, or formed into an extract. As with valerian, the nervine power is increased by combination with mild tonics.

Lavender. *Lavendula Spica.* The flowering spikes.

Lavender is a small perrennial shrub, a native of the south of Europe, but frequently cultivated in our gardens for perfume. The flowers of both have a fragrant, agreeable smell, and a warm pungent, bitterish taste. There are two varieties; the broad leafed sort is the strongest in all respects, and this only is used in the distillation of the oil called oil of spike.

Lavender is considered as a warm stimulating aromatic. It is principally used as a perfume.

Broad Leafed Laurel. *Kalmisa Latifolia.* The leaves.

This plant kills sheep and other animals. The Indians use the decoction to destroy themselves. The powdered leaves are employed with success in scald head, and in certain stages of fever. A decoction of it is used for the itch, but it should be cautiously applied. In syphilis this plant has seemed useful.

White Pond Lily. *Nymphæ Alba Aquatica.* The root.

This grows in ponds and wet grounds throughout the United States, and is pretty generally known. The leaves lie on the water; blossoms yellow; root as large as a man's leg, knotty and spongy, of a yellow color outside, and white within.

The root is emollient, demulcent, cooling, and is good in uterine fluxes, gleet and whites. They are applied externally to scrofulous tumors, will ease pain, and promote suppuration. For gleets and whites, take the expressed juice of this root, and to every pint of it, add half a pint of port wine, and four ounces of sugar. Of this the patient may take a large tea cupful four times a day.

The root roasted in ashes, and applied to wounds from bruises, nails, &c. is very good to draw out substances, and allay inflammation. A poultice of this root, cohush root, and slippery elm bark, all pulverized, and mixed together with cold water, will discuss white swellings: it should be changed three times a day; giving the patient, at the same time, internal cleansing remedies.

Liquorice. *Glycyrrhiza Glabra.* The root and extract.

This is imported from the south of Europe, and considerably used for medicinal purposes.

Liquorice root is a pleasant demulcent, and possesses gentle deterging qualities, which renders it an excellent medicine in coughs, hoarseness, asthma, &c. for lubricating the throat, softening acrimonious humors, and affording relief to the organs of respiration. But with this intention it ought to be taken as a diet drink in considerable portions, by way of infusion. This plant has been found in the state of Vermont, and on the Ohio river.

Leatherwood. *Dirca Palustris.* The bark, berries, and root.

Also moosewood, rope bark, leatherbush, &c. It grows in swamps, and is well known from its tough bark. The bark has a peculiar nauseous smell. The decoction and extract are bitter, but not acrimonious.

It is emetic, cathartic, epispastic, expectorant, &c. and the berries are narcotic. The fresh root and bark in substance, at the dose of five to ten grains, produce vomiting, with a sense of heat in the stomach, and sometimes acts as a cathartic also. They are an active and dangerous medicine, to which less acrimonious substances ought to be preferred. Applied to the skin they produce blisters in thirty hours. The berries produce nausea, giddiness, stupor, &c. like other narcotics. It is expectorant and sudorific in very small doses.

Maidenhair. *Adiantum Pedatum.* The herb.

This plant is found in deep woods and rich soil, throughout the United States. The root is large, fibrous and brown. Stalk about a foot high before it branches, of a chesnut color, shining and smooth; branching into two, each branch bearing several long leaves resembling brake or fern.

Maidenhair is expectorant, mucilaginous, and sub-astringent. It is used in decoction, or syrup. It is much esteemed throughout Europe, although little known in America. It is found useful in all coughs and hoarseness, also in asthma, and tickling of the throat, and even in pleurisy and all disorders of the breast. It promotes the secretions, strengthens the fibres, and helps the cure of jaundice. It is a very good vehicle and auxiliary for pectoral remedies, and even cathartics. Liquorice may be added to the decoction, to render it more efficient. Influenza is often cured by using this syrup; and it has the advantage, that it may be taken in an unlimited dose.

Mandrake, or May Apple. *Podophyllum Peltatum.* The root.

This well known plant rises from one to two feet high, branching into two stems, each bearing on its top two large umbrella-like leaves; flowers yellowish, producing a large fruit, something like a lime, and from whence it derives its name of yellow May-apple. The roots are sometimes as large as the little finger, very long, and milky. It grows on uplands, in meadows and woods.

Mandrake root, pulverized, is one of the best native emetics and purgatives which this country affords. It purges thoroughly and efficiently in average doses of twenty grains. A common dose will often vomit, but in the gentlest manner; and in a larger dose it vomits pretty certainly, and effectually. Its cathartic operation is generally slow, often remaining twenty-four hours, and sometimes it produces considerable distress, particularly if the stomach is very foul; but this is more than compensated by the thorough and cleansing manner in which it performs its work. It is usually given in a little cold water, on going to bed. It may be combined with aromatics to render its action milder, or with more active cathartics to quicken its operation.

As an anthelmintic, it often destroys worms, and is used by the southern Indians for that purpose.

The best time for gathering mandrake root is in autumn, after the tops have withered.

Manroot, or Bindweed. *Convolulus Panduratus.* The root.

Also called man-in-the-ground, wild potatoes, wild rhubarb, mechameck, potatoe vine, &c.

Is common all over the United States, in poor, loose, sandy soils, upon glades and thickets Its top is weak and trailing, running

along the ground much like a grape vine, and set with large triangular leaves; flowers, which grow on long stems from the axilla of the leaves, are large, bell-shaped, and whitish, with a purple tinge. The root is very large, hard, yellowish, from two to four feet long, as thick as the arm, milky inside, running deep into the earth, and often branched below.

Its properties are cathartic, diuretic, and pectoral. It acts like jalap, rhubarb, or scammony, at a larger dose, when given in substance; but the extract from the fresh root is more efficient, and is a mild cathartic in a dose of ten or twelve grains. It is often used by the Indians. As a diuretic it is useful in gravel, stranguary, dropsy, &c.; it enables to evacuate small calculous substances, and may be taken in substance or decoction. As a pectoral, it has been used for consumptive coughs, and asthma: a syrup is made of it with skunk cabbage is used for that purpose.

It is asserted that the Indians can handle rattlesnakes with impunity, after wetting their hands with the milky juice of this root. It should be collected at the end of summer, and if to be dried, ought to be cut in slices.

Manna. *Fraxinus Ornus.* The concrete juice of manna ash.

Manna is obtained from a species of ash, and is principally collected in Sicily. The best manna is imported in oblong, light, friable flakes, or pieces of a whitish or pale yellow shade, and somewhat transparent. The inferior sorts are moist, unctuous, and of a darker color.

Manna is a mild and agreeable laxative, which may be safely administered to children, and the aged, though in some constitutions it is apt to induce flatulence; but this may be remedied by the addition of aromatics. The dose for children is according to their age, from one to three drachms, and for adults, one ounce, or one and a half. Manna is also a useful demulcent, and promotes expectoration.

Mallows. *Malva Sylvestris.* The leaves and flowers.

Common, low, running mallows, is an annual plant, growing about houses, in foot paths, among rubbish, and by the side of roads. It is known by its bearing little cheeses, as they are called.

The whole plant abounds with mucilage, and is very useful, in decoction, for dysentery, urinary complaints, &c. It is often used in emollient cataplasms, clysters and fomentations.

Marsh Mallows. *Althea Officinalis.* The root and leaves.

The marsh mallow is a perrennial, indigenous plant, growing in salt marshes, and on the banks of rivers.

Every part of the marsh mallow, and especially the root, upon boiling yields a copious mucilage; on account of which it is frequently

employed in emollient cataplasms, and by way of infusion. In humid asthma, hoarseness, dysenteries, and likewise in affections of the kidneys and gravelly complaints, it is of eminent service; as by lubricating and relaxing the vessels, it procures a more easy passage to the stagnant fluids. It is used with equal advantage externally, for softening and maturating hard tumors, and affords relief in difficult teething.

Marsh Rosemary. *Statice Limonium.* The root.

Also sea lavender, lavender thrift, &c. This plant grows in salt marshes, along the whole sea coast. It rises about a foot in height; leaves lance-like; root large, and five or six inches long, much resembling a red beet; flowers blue and very conspicious, on long spikes.

The root is a powerful astringent, and antiseptic; and is very beneficial in gleets, whites, diarrhœa, dysentery, and relaxation of the womb and parts. A decoction of these is given and used as a gargle, with success in cankers and ulcerated sore throats; and the powder sprinkled on any ill-conditioned sore, has a good effect. It is held in high estimation in severe dysenteries, and the putrid sore throat, accompanying scarlet fever. For these purposes it may be taken in decoction, and also used as a gargle. In a large dose it operates as a vomit; in a smaller it proves a powerful expectorant. The decoction should be sweetened with sugar.

Marsh rosemary is a valuable article in the materia medica, and is much used as a domestic medicine, for sore throats, &c. in the eastern states. It is one of the most powerful antiseptics known.

Wild Marjoram. *Origanum Vulgari.* The herb.

Has a creeping root under ground, from which shoot up several square, brownish, hard stalks, with small dark green leaves, like those of sweet marjoram, but broader. At the top of the stalks stand tufts of flowers, of a deep purplish color. It grows plentifully in the borders of cornfields, and in copses.

Wild marjoram is a powerful diaphoretic and sudorific, stomachic and emmenagogue. It is used in decoction for creating a sweat, and for bringing down obstructed menses.

Sweet marjoram possesses nearly the same properties, and may be used for the same purposes.

The powder of the herb sweet marjoram, snuffed up the nose, powerfully provokes sneezing. Oil, commonly known as Origanum oil, is made from it, which is warming and relaxing to stiff joints.

Marigolds. *Calendula Officinalis.* The herb.

This is cultivated in gardens, and is sometimes used as a domestic medicine for children. It possesses much the same qualities as saffron, only in an inferior degree. It is used to keep out eruptions.

Masterwort. *Imperatoria Ostruthium.* The root.

This aromatic plant rises about two feet in height. The root is perrennial, large, succulent, and tapering; the stalk striated and round; leaves three together, each divided into three lobes, and the stem sheathed where it joins the stalk; flowers umbelliferous. It grows on high rich soils, in most parts of the United States.

The root is a warm aromatic, a salivant, expectorant, and laxative. Held in the mouth, it excites spitting; infused in water, sweetened with honey, it promotes expectoration, and has been found beneficial in the colic, and flatulent disorders of the bowels; it is good to promote the menstrual discharge, helps digestion, asthma, colds, disorders of the brain, catarrh, palsy, apoplexy, and ague.—A drachm of the powdered root may be taken in wine at a dose; or it may be taken in infusion, freely.

Mayweed. *Cortuta Fœtida.* The leaves and flowers.

Sometimes called wild camomile.

This herb rises two feet high; leaves ovate; flowers yellow, resembling camomile flowers, but smaller. It grows by the road sides in low grounds.

The leaves are a powerful sudorific, and answer all the intentions of camomile flowers, except that they are inferior in strength. In fevers and common colds, where perspiration is necessary, these may be employed to good advantage.

Meadow Saffron. *Colchicum.* The root.

This root, and preparations from it, have been employed by the faculty in many diseases. It possesses great power, but it is uncertain and unsafe, from the variableness of its strength; the root in autumn is almost inert; but in the beginning of summer, an acrid poison. In large doses, it is a deleterious, acrid narcotic; in smaller ones, a cathartic and diuretic. The German physicians have celebrated its virtues as a diuretic in dropsies, asthma, and some other chronic diseases. Afterwards, infused in wine, it became quite popular as giving relief in the gout. Its use was soon extended to chronic rheumatism, and other painful affections, though with equivocal success.

Colchicum has lately been given most frequently in powder.—Five or six grains may be taken three times a day, by an adult. It is always proper to begin a new root with small doses, till you have ascertained its strength, as an over dose might be fatal.

Mezereon. *Daphne Mezereum.* The bark of the root.

Also spurge laurel. An indigenous low shrub, growing in woods

and shady places, and flowering in the months of February or March. It grows plentifully in the vicinity of the Ohio river. When cultivated in gardens, in a rich soil, it attains to the height of sixteen feet.

This whole plant is so corrosive that six of its berries are said to kill a wolf. The bark of the root, when chewed for sometime, is extremely acrid to the taste, exciting an insupportable sensation of burning in the mouth and throat.

Mezereon is a stimulating diaphoretic, and has been found serviceable in chronic rheumatism, and cutaneous diseases. Its principal use is in syphilis, as being particularly efficacious in removing venereal nodes, and disposing ulcerations to heal. It is given in the form of decoction: two drachms of the bark, with half an ounce of liquorice root, being boiled in three pounds of water to two pounds, and four or six ounces of this given four times a day. It is generally combined with sarsaparilla, when it forms the "compound decoction of in sarsaparilla," kept the shops.

Milkweed, or Silkweed. *Vincetoxicum*. The root.

This plant has a square stalk, rising three feet high; leaves smooth, oval, and milky: flowers yellow, which terminate in a pod resembling a cucumber, filled with a silky down. It grows plentifully by road sides, on sandy grounds. The root is white, and about a foot long.

The root has lately been found effectual in the cure of dropsy. It is a powerful diuretic, sudorific, emmenagogue, and alexipharmic, and has been found beneficial in catarrhal, cachectic, scrofulous and rheumatic disorders, and worms in children.

Boil eight ounces of the dry root to three quarts; of this a gill may be taken four times a day for the dropsy, increasing the dose according to its effect. For other complaints a larger dose may be taken. Or the roots in tincture with gin may be used in dropsy and gravelly disorders.

Misletoe of the Oak. *Viscum Album*. The leaves.

This is a parasitical plant, something like a large bush; it grows on various trees, but that which is found on the oak is chiefly used. The branches are regularly forked, leaves ending obtuse, in pairs; berries white, smooth, globular and clustered, remaining on throughout the winter, and contain one fleshy seed.

It should be separated from the oak about the last of November, gradually dried, ground into a fine powder, and confined in a bottle well stopped.

Misletoe has been recorded as an efficacious remedy in epilepsy, by many eminent physicians, both ancient and modern: the reason why it has failed in later trials of some practitioners, is probably because they did not prescribe a sufficient quantity, or because it had been long exposed to the air, when it lost its virtues.

To begin, the dose may be a tea spoonful four times a day, in valerian tea, increasing the dose to two or three tea spoonsful, according to its effects.

Mountain Mint. *Melissa Grandiflora.* The herb.

Is a large wild plant, or species of balm, of a very hot taste, growing from two to three feet high, bearing a blossom on the top of its stem, like a small rose.

A tea of this herb has been found very effectual to relieve the gravel, even when other medicines have proved ineffectual. Generally speaking, it is a safe and valuable diuretic and diaphoretic.

Monkshood, or Wolfsbane. *Anconitum Napellus.* The herb and root.

This is a perrennial plant, found on high mountains; it is common in Germany. It grows from two to five feet high; leaves lobed, deeply lancinated, standing alternate, upon long footstalks, the surface of the leaf of a deep green, the under side whitish; flowers numerous, terminal, of a deep purple, and hood-shaped.

The fresh plant and root are very violent poisons, producing remarkable debility, paralysis, and other consequent symptoms. By drying, their acrimony is almost entirely destroyed. For medical use the root must be gathered before the stem shoots.

When properly administered, it acts as a penetrating stimulus, and generally excites sweat, and sometimes an increased discharge of urine. On many occasions it has been found a very effectual remedy in glandular swellings, venereal nodes, stiffened joints, amaurosis, gouty and rheumatic pains, intermittent fevers, and convulsive disorders.

It is commonly used in the form of an inspissated juice, or extract. It is an unfortunate circumstance, that the powers of this medicine vary much, according to its age, and the heat employed in its preparation. When fresh, its action is often too violent, and when kept for more than a year, it becomes totally inert. Therefore it may be laid down as an universal rule in the employment of this and many other similar medicines, to begin with very small doses, and to increase them gradually to the necessary degree. We may begin by giving half a grain of the extract of monkshood, made up into a pill with any convenient substance, twice or thrice a day, gradually increasing the dose.

Motherwort. *Leonurus Cardiaca.* Root and herb.

This valuable plant has a hard, square, brownish, strong stalk, rising from two to four feet high, spreading into many branches, leaves broad and long, two at every joint, notched about the edge. From the middle of the branches to the tops grow the flowers round about them, in sharp pointed, rough, prickly husks or burs, of a red

or purple color. The root sends forth a number of long strings and small fibres, of a dark yellowish color.

Motherwort is an excellent antispasmodic and emmenagogue, and is also a cordial diaphoretic. It may be given in powder, a table spoonful at a dose; or the expressed juice, half a table spoonful; or in infusion. It relieves hysterical symptoms, procures sleep, abates delirium, and allays spasms and risings of the uterus; it is admirably adapted to the cases of those females who suffer pains from tenderness about the lower bowels and loins. It brings on the menses. As a warm cordial, it may be used in low fevers, and in chronic weakness, with nervous affections, cramps and convulsions.

Mapleleaf Alumroot. *Heucheria Acerifolia.* The root.

Also alumroot, ground maple, splitrock, sanicle, &c.

The root is perrennial, yellowish, horizontal, crooked, with few fibres; leaves radical, on long hairy stems, shaped like those of the maple-tree; flowers very small, forming a long panicle, occupying half the length of the stem, flesh colored; seeds small and black. There are several species of this plant.

The root of these plants is a powerful astringent, antiseptic, vulnerary and detergent, and is equal to cranesbill. It was used by the Indians, in powder, as an external remedy in sores, wounds, ulcers, and even cancers. It is employed as a styptic in internal and external hemorrhage, bleeding at the nose, foul or indolent ulcers, wounds and cuts. It is seldom taken internally, the taste being so intensely astringent; but it promises to be useful even in very small doses, where astringents are indicated.

Mountain Dittany. *Cunila Mariana.* The herb.

Also, stonemint, wild basil, sweet horsemint, &c.

Rises about a foot high, stem smooth, yellowish or purplish, slender, brittle, with many long branches; leaves large at the base, arrow-shaped, smooth, pale green; flowers small but handsome, of a pink, or white color, forming terminal clusters; root perrennial, fibrous and yellow. It is found on mountains and dry hills, in all parts of the United States. The whole plant has a warm, fragrant, aromatic, pungent taste and smell.

Dittany is a stimulant, nervine, sudorific, subtonic, vulnerary, cephalic, &c. The whole plant is used, and usually taken in warm infusion. Dittany tea is a popular remedy throughout the country, for colds, headachs, and whenever it is requisite to excite a gentle perspiration. It partakes of the properties of the grateful aromatic plants, and also of the camomile; while it affords a more palatable drink. Its fragrant tea is preferable to that of sage; it has neither the pungency of mint, nor the nauseous smell of pennyroyal. It relieves nervous headachs, and hysterical disorders. It is used in the southern states, in fevers, to excite perspiration, and suppressed menstruations. It is a useful drink in nervous diseases, colics, and in-

digestion. Externally, it is employed for bruises and sprains; and was one of the plants resorted to for curing the bites of serpents.—The essential oil possesses all the properties of the plant, and a few drops are sufficient to impart them to mixtures.

Mouse Ear. *Hieracium Pilosella.* The whole plant.

Mouse ear is a low creeping herb, something like the strawberry, shooting forth small strings and roots, on which grow many small short leaves, set in a round form together, and very hairy, which are milky. The flower stem is three or four inches high, on the top of which is a pale yellow flower, resembling a dandelion. It grows on ditch banks and in sandy grounds, and continues green all winter.

It is antiseptic, detergent, diuretic, expectorant, &c. The juice or decoction, drank twice a day, continually, is good in jaundice; relieves the stone, and gripings in the bowels. It is an excellent gargle for the sore throat, and cleansing to malignant ulcers, canker, &c.

Mugwort. *Artemisia.* The herb.

The stalk of this herb rises about two feet in height; leaves deeply divided into several segments, similar to wormwood, pointed, on the upper side, of a deep green, and on the under downy, cotton-like; flowers small, purplish, in spikes, and alternate from the axilla of the leaves. It grows in gardens, near old houses, and along the sides of roads.

The leaves of this plant are deobstruent, laxative, diaphoretic, diuretic, emmenagogue, antihysteric, antispasmodic, anthelmintic and corroborant. An infusion of the leaves and tops open obstructions, relaxes the belly, promotes insensible perspiration, urine and the menses and is good in removing spasms. It has also been found effectual in destroying worms, and relieves the palpitation of the heart. In agues, after an emetic, a decoction of this herb may be taken constantly till the fever is broke.

Mullein. *Verbascum.* The leaves.

This well known plant grows from three to eight feet high, with an upright stalk, set with large, long woolly leaves; flowers small, and of a beautiful yellow color, which clothe the extremities of the stem. It grows by road sides, and on poor land.

The leaves have a bitterish sub-astringent taste, and a mucilaginous quality, and have been found beneficial in catarrhs, diarrhœas, and piles. For internal use the leaves may be boiled in new milk, to which sugar may be added, and taken in dysenteries, &c. at the same time giving aromatics. Persons accustomed to the piles, may sit over the steams of mullein decoction for half an hour, washing the anus with the warm leaves, till the piles come down when they may be opened. Afterwards some proper ointment will be necessary.

Black Mustard. *Sinapis Nigra.* The seeds.

This garden plant is so well known, as to need no description. It is a warm stimulating medicine in cold phlegmatic habits, and where the blood is torpid and inactive ; it quickens the circulation and enlivens the system. It is a strong diuretic, and may be used with advantage in dropsies, chronic rheumatism and palsies ; also in intermittent fevers. A tea spoonful of the powdered seeds may be taken night and morning.

A poultice of bruised mustard seeds, alone, or combined with horse radish, and mixed with vinegar and crumb bread, forms a strong drawing poultice when applied to the soles of the feet, or palms of the hands, to bring the circulation into the extremities, and relieve pain in the head. These may be employed in fever, and many other complaints with great benefit.

Myrrh. *Myrrha.* The gum.

Myrrh is the produce of a shrub growing in the East Indies. The best myrrh is somewhat transparent, of a uniform brownish, or reddish color ; of a slightly pungent bitter taste, with a strong, aromatic, not disagreeable odor, though nauseous to the palate.

In its medicinal effects, this aromatic bitter, when taken internally, is supposed to warm and strengthen the stomach and other viscera; it frequently occasions mild sweats, and, in general promotes the fluid secretions. Hence it has been used with advantage in cases of debility ; in diseases arising from suppression of the urine, or from inordinate discharges, in cachectic habits, and those persons whose lungs and throat are oppressed with viscid phlegm. It is supposed to be useful in malignant and putrid fevers, from its antiseptic quality. For these purposes it should be taken in doses of half a drachm or upwards. The common dose is from twenty to thirty grains. The tincture is often used.

Nettle. *Urtica Dioica.* The leaves, and seeds.

This common plant is so well known as to need no description.

The leaves of the fresh plant stimulate, inflame, and raise blisters on the part of the skin where they touch : hence when a powerful rubefacient is required, stinging with nettles has been recommended. The juice is astringent, and is good in gravelly complaints, internal hemorrhage, spitting of blood. The decoction is good for those who make bloody urine, and for all beginning consumptions. It is asserted that the seeds and flowers of the nettle may, with efficacy be substituted for the Peruvian bark, in all febrile affections, especially in tertian and quartan agues. The portion to be given should never exceed one drachm, given in wine : in large doses it induces a lethargic sleep.

Nutmeg. The fruit.

Nutmeg is used in medicine as a grateful aromatic, astringent and stomachic: hence it is often administered in diarrhœas and dysenteries, in doses from ten to twenty grains in powder, or in larger quantities when infused in port wine. In violent headachs arising from a debilitated stomach, small doses of this medicine have frequently been found of real service: but, if injudiciously employed, it is apt to affect the head not unlike opium.

Nanny Bush. The bark.

The shrub known by this common name, grows in most parts of New York, and probably throughout the United States. I know of no other name than the above for it, except black haw.

It rises from five to eight feet high; bark very rough, and of a dark gray; leaves long; berries hang in clusters, and turn black after frost. It grows in marshes and low pastures.

The bark is an excellent tonic, is considered superior to the Peruvian bark, and may be used for all the purposes to which that is applied.

Oak. *Quercus, Robur.* The bark.

The bark of this valuable tree is a strong astringent, and possesses tonic and antiseptic virtues. White oak bark exceeds in astringency the Peruvian bark, and falls but little, if any, short of it, in its tonic powers. Hence we have a valuable domestic substiute for Peruvian bark, which is successfully employed in hemorrhages, uterine fluxes, whites, &c. It may be taken in powder or decoction; but the last is preferable. It has been used successfully in intermittents.

In checking gangrene, it has succeeded when Peruvian bark failed. It was given in decoction in very large quantities, and the affected part was constantly kept wet with the same decoction.

Oats. *Avena Sativa.*

When deprived of their husks and formed into groats, oats are converted into an excellent dish for the infirm and diseased. When ground into meal, and boiled in water, they afford a thick and nourishing mucilage, which with the addition of a few currants, is very wholesome and produces a mildly laxative effect. Gruels or decoctions of groats or oat meal, either plain, acidified or sweetened, form an excellent drink in febrile diseases, diarrhœa, dysentery, &c. and from their demulcent properties, prove useful in inflammatory disorders, coughs, hoarseness, roughness and ulceration of the fauces.

Another valuable purpose to which oats are applied, is as a fomentation in inflammatory fevers, pleurisy, &c. They should be warmed or fried in vinegar, and applied as hot as can be borne.

Opium. The gum.

Opium is the thickened juice of the white poppy, which is a native of the warm parts of Asia, and Turkey. Two kinds of opium are found in commerce, distinguished by the names of Turkey, and East India opium.

Turkey opium is a solid compact substance, possessing a considerable degree of tenacity; when broken having a shining fracture, and uniform appearance; of a dark brown color, and becoming yellow when reduced to powder; scarcely coloring the saliva when chewed, exciting at first a nauseous bitter taste, which soon becomes acrid, with some degree of warmth; and having a peculiar, heavy, disagreeable smell. The best is in flat pieces. The round masses are of an inferior quality. It is bad if it be soft, friable, mixed with any impurities, or have an intensely dark or blackish color.

East India opium has much less consistence, being sometimes not much thicker than tar, and always ductile. Its color is much darker; its taste more nauseous, and less bitter; and its smell rather smoky. It is considerably cheaper than Turkey opium, and supposed to be of only half the strength.

Opium when taken into the stomach to such an extent as to have any sensible effect, gives rise to a pleasant serenity of mind, in general producing a degree of languor, and drowsiness; the action of the pulse becoming generally softer, fuller, and slower than it was before. It diminishes all the secretions and excretions, except the cuticular discharge, which it frequently augments in a very sensible degree. It excites thirst and renders the mouth dry and parched.

Taken into the stomach in a larger dose, it gives rise to confusion of head and vertigo. The powers of all stimulating causes of making impressions on the body are diminished, and sleep is irresistibly induced. In still larger doses it acts in the same manner as narcotic poisons, giving rise to vertigo, headach, delirium, &c. terminating in a state of stupor, from which the person cannot be roused. This stupor is accompanied with slowness of the pulse, and with a stertor in breathing, and the scene is terminated in death, attended with the same appearances as take place in apoplexy.

From these effects of opium in a state of health, it is not wonderful that it should be employed in disease to mitigate pain, induce sleep, allay inordinate action, and diminish morbid sensibility, and in answering these intentions, all its good effects are explained.

But opium is not alone in answering these purposes, and particularly as an anodyne in procuring sleep and allaying pain. The extract and other preparations of hops may be substituted with advantage. for these last purposes, having the desired effect, without being accompanied by the deleterious consequences of opium. The extract of hops may be employed where opium disagrees with the stomach.

Opium may be administered with benefit in dysentery, diarrhœa, &c. after the use of gentle laxatives, from its power of allaying the acrid irritation of the bowels, and checking the discharge. In cholera morbus, it is preferable to any thing else. It may be used in colics, tetanus, &c. In short, circumstances may occur in almost every disease that may render a pill of opium beneficial.

It is generally given in the form of a pill, by itself, and is more apt to sit on the stomach in this form than in any liquid, but requires rather more time to produce its effects. The requisite quantity is very different in different persons, and in different states of the same person. A quarter of a grain will in one adult produce effects which ten times the quantity will not do in another; and a dose that might prove fatal in cholera or colic, will not be perceptible in many cases of lock-jaw or mania. The lowest fatal dose to the unaccustomed, as mentioned by authors, seems to be four grains; but a dangerous dose is so apt to puke, that it has seldom time to occasion death. When given in too small a dose it is apt to produce disturbed sleep, and other disagreeable consequences; and with some constitutions it seems not to agree in any shape. Often, on the other hand, from a small dose, sound sleep, and alleviation of pain will be produced, while a larger one gives rise to vertigo and delirium. Some prefer the repetition of small doses, others the giving of a full dose at once. The soporific effect of a moderate dose is supposed to last in general about eight hours from the time of taking it.

Externally applied, opium alleviates pain, and relieves spasmodic action. Hence its utility in colic, inflammation, toothach. In the form of clyster, combined with starch, it is of singular efficacy in obstinate relaxes, and it is employed under the same form in other diseases, where its administration by the mouth is inconvenient or impracticable.

The soporific effects of opium may be checked if a proper quantity of vegetable acid be taken with it, or immediately after it. Thus, if an ounce of pure lemon juice, or twice that quantity of good vinegar, be added to every grain of opium, or to twenty-five drops of laudanum, such a compound will produce a very different effect. Instead of stupifying the head, and producing troublesome costiveness, it will not only relieve the bowels, but also occasion a degree of cheerfulness, never attainable by the use of opium alone, and afterwards induce a composed refreshing sleep.

Opium is often used for the horrid purpose of self-destruction. The alarming symptoms induced by it, are, vomiting, delirium, stupor, deep and difficult breathing, convulsions and death. The remedies are, in the first instance, powerful emetics of lobelia, or blood root; white vitriol is frequently used, twenty grains being given immediately in a glass of warm water, and repeated every ten minutes till copious vomitings are excited. Warm water is then to be freely given, together with a smart purgative, joined with a few grains of potash. These should be succeeded by copious draughts of vinegar, lemon juice, buttermilk, or other vegetable acids, or strong coffee, which last appears to be the most effectual antidote.

A principal object to be kept in view, is to produce such a degree

of irritation as may counteract the narcotic effects of this deleterious drug. Hence it is very useful to stimulate the nostrils with spirits of hartshorn, and to apply friction with salt over the whole body.—When the symptoms of apoplexy come on, the remedy is copious bleeding.

Olive Oil, or Sweet Oil. The oil of the fruit of the olive tree.

The olive tree is a native of the southern parts of Europe. Its fruit is considerably used as an article of food by the inhabitants of the countries which produce it; but it is hurtful, its oily nature relaxing the stomach.

Medicinally considered, olive oil has lately been found an excellent preventive of the plague, when rubbed over the whole body, immediately after the contagion is supposed to have been taken. The oil, when properly applied, and followed by a considerable degree of friction, occasioned a copious sweat over the whole body, by which it is said the patients were immediately cured.

Olive oil has also been employed with success as an antidote against poison occasioned by the bite of serpents, especially that of the rattlesnake. In several cases apparently desperate, when a few spoonsful of oil had been swallowed, the violent symptoms instantaneously subsided, and cures were soon effected. *In gouty patients,* sweet oil rubbed on the pained limb, proves a soothing, safe, and useful application. It is also beneficially employed internally for recent coughs, colds, hoarseness, &c. and is a gentle laxative. It is also directed in large quantities to mitigate the action of acrid substances taken into the stomach. Externally, it is used in frictions, gargles, and in clysters; but its principal use is for the composition of ointments and plasters.

Orange. *Citrus Aurantium.* The fruit.

The juice of oranges is a grateful acid liquor, of considerable use in febrile and inflammatory distempers, for allaying heat, quenching thirst, and promoting the salutary excretions. The sweet orange is to be preferred, as being more mild, and less acid; and it is employed in its most simple form with great advantage, both as a cooling medicine and as an useful antiseptic in fevers of the worst kind.—The outer yellow rind has a grateful aromatic flavor, and has been employed to restore the tone of the stomach; it is a very common addition to bitters used in dyspepsia.

Palm Oil.

This oil is obtained from the kernel of the fruit of the palm tree, cultivated in the West Indies. It is of an orange color, of the consistence of ointment, emitting a strong agreeable odor, and very little taste; both of which it loses by long keeping, when it is unfit for use. It is employed chiefly externally, for mitigating pains, cramps, and

similar affections, and also for the cure of chilblains. With camphor, palm oil makes a very excellent liniment of the stimulating kind: sal ammoniac added to this, finely pulverized, forms one of the most active and valuable liniments, for discussing indolent tumors, rigidity of the tendons, &c.

Partridge Berry. The vine.

Also called, squaw vine, winter clover, one berry.

This is a small vine on the ground, with small round green leaves, like those of clover, and bearing one red berry in a place. It is green through the winter. It is found in woods, among hemlock timber, and in swampy places.

This is an invaluable plant for child-bearing women. I first obtained the knowledge of its use from a tribe of Indians in the west part of New York, though not without considerable difficulty and intrigue. The squaws drank it in decoction for two or three weeks previous to, and during delivery, and it was the use of this herb that rendered that generally dreaded event, so remarkably safe and easy with them.

It will be seen that this vine forms a principal ingredient in the "mothers' cordial." Indeed, it would answer almost as well alone, as combined with the other ingredients.

Peach. *Amygdalus Americana.* The leaves, blows and pits.

The flowers and leaves of the common peach tree, are an excellent remedy for worms in children, and I have often had recourse to them when other means failed. A handful of the leaves and flowers, or leaves alone, may be steeped, and the decoction given repeatedly in small doses, followed by a purge, which will usually bring the vermin away. This decoction is said to be effectual in removing urinary obstructions.

Peach pits tinctured in brandy, in proportion of four ounces to a quart, form a powerful tonic in all cases of debilities, fever and ague, &c. and is remarkably efficacious in curing the whites. A teaspoonful of this preparation may be taken three or four times a day.

Pennyroyal. *Hedoema Pulegioides.* The herb.

This plant has a small, fibrous, yellowish, annual root; upright stem, with slender erect branches; leaves opposite, small, oblong, rough, and pale beneath; flowers all along the branches, in axillary whorls of six, very small, white with purple edges. Pennyroyal is very common and abundant all over the United States, and grows principally in dry soils. The taste and smell are very pungent, and bitterish.

It is carminative, resolvent, pectoral, diaphoretic, antispasmodic, emmenagogue, stimulant, &c. It is a deservedly popular remedy

throughout the country for female complaints, suppressed menstruations, hysterics, &c. It is chiefly beneficial in obstructed menses, and recent cases of suppressions, given as a sweetened tea, and used as a bath or fomentation. It promotes expectoration in the whooping cough, it alleviates spasms, pains in the hips, and the spasmodic or dyspeptic symptoms of menstruations. It is also used in palpitations, fevers, and gout. It is employed extensively for colds, colics of children, to remove obstruction, warm the stomach and promote perspiration.

Peppermint. *Mentha Piperita.* The herb.

Of the different mints, this is one which has the greatest degree of pungency. The leaves have a strong, rather disagreeable smell, resembling that of pepper. They afford an essential oil, rich in the aromatic qualities of the herb.

Peppermint is used as a stimulant and carminative, to obviate nausea or griping, or to relieve the symptoms resulting from flatulence. It is also an excellent stomachic, of great use in wind colics, cramps in the stomach, languors, and hysteric cases, and in vomiting. It is used under the forms of the watery infusion, the distilled water, and the essential oil. This last being dissolved in a due proportion of rectified spirits of wine, and colored with green grass, forms the essence of peppermint of the shops: a fashionable and pleasant carminative, and when taken on sugar, imparts a glowing taste, and warmth, to the whole system.

Peruvian Bark. *Cinchona Officinalis.*

I shall give a more brief description than is commonly bestowed upon this universal medicine, because, with botanic physicians, it is by no means an indispensable article, as it is with others In this, however, I would not be understood as depreciating the value of the bark, but merely as intimating that substitutes are found and used in our own country, that answer all its purposes.

There are three kinds of bark in commerce: viz. the common, (which is pale,) the yellow, and the red. The first is considered the genuine.

The tree affording this bark grows wild in the hilly parts of Peru.

The common pale bark is in the form of small quilled twigs, thin, covered with a rough brownish coat. Its taste is bitter and slightly astringent; slightly aromatic, with some degree of mustiness.

The yellow bark has only been introduced since the year 1790.—It is in flat pieces, externally smooth, internally of a light cinnamon color; it has a taste incomparably more bitter than the common, with some astringency.

The red is in large thick pieces, externally covered with a brown, rough coat; of a dark red color; taste and smell similar to that of the pale, but the taste rather stronger.

Peruvian bark acts powerfully as an astringent, tonic, and antiseptic, yet these principles will by no means explain all the effects de-

rived from it in the cure of diseases. Many practitioners are disposed to view it as a specific, but it cannot be considered entitled to that appellation; but it is a very powerful remedy of the operation of which no satisfactory explanation has yet been given.

It was first introduced for the cure of intermittent fevers; and in these, when properly administered, it is generally successful. But in latter years, if not formerly, it has so frequently disappointed expectation, that the general confidence in it is shaken. Its failure, however, is probably in a great measure owing to its improper administration; to its adulteration; to its profuse use; and last, though not least, to its being employed alone indiscriminately, uncombined with proper aids. It is now generally given from the very commencement of the disease, without any previous evacuation, or without any thing being done towards the removal of the original cause, which is often a cold slime in the stomach, or a weak and watery state of the blood. Until these are first remedied, neither Peruvian bark nor any other astringent tonic can be expected to cure with certainty. It may, by its bracing power, quell the present fit; but the original cause and disposition remaining, the patient continues feeble, and liable to frequent returns, of the ague, the cure is retarded, and abdominal inflammation, scirrhus, jaundice, hectic, dropsy, &c. are induced. These effects of the indiscriminate and improper use of Peruvian bark, or of its salts, quinine, have been severely felt throughout this country, within a few years.

Bark has been used with success, after proper evacuations, in continued fevers, in gangrenous sore throats, contagious dysentery, passive hemorrhage, dropsy, mortification, and similar affections.

It may be exhibited in substance, in fine powder, which is considered the best manner. It is given in doses from five grains to two drachms and upwards, and must be taken in some liquid, as wine, or any spiritous liquor, and if it excite nausea it is combined with aromatics. Neither water nor alcohol extract all the properties of bark.

It is also administered in the forms of infusion, tincture, decoction, and extract, and latterly in a substance composed of the salts of bark and sulphuric acid, termed sulphate of quinine.

From my observation of the use and effects of bark, I conclude that it would generally be attended with far greater benefit, if its exhibition were preceded by proper evacuations of the stomach and bowels; if it were combined with suitable carminatives, aromatics, &c.; and, generally, if it were given in a less quantity than is usually prescribed; in a word, if it were administered with some degree of discretion and judgment, instead of throwing it in indiscriminately in all cases.

In intermittent fevers, it is generally given in doses of a scruple or half a drachm, and repeated every two or three hours during the interval of the paroxysm. In remittent fevers it is given with equal freedom. In fevers connected with debility, it is by some considered as a valuable remedy.

The extract is a preparation of considerable power, when properly prepared, and is adapted to those cases where the remedy requires to be continued for some time. It is then given in the form of a pill, in a dose of from five to fifteen grains.

PERSIMON TREE. *Diospyros Virginiana.* The bark and fruit.

The persimon is a common tree, rising from fifteen to sixty feet, with a smooth bark, and spreading branches. Its blossoms are of a pale yellow, or orange color, and appear in May or June, when the leaves are yet unfolded. The fruit is only ripe late in the fall, and after frost; they resemble a yellow plumb, but are globular. When green, they are most intensely astringent; but when fully ripe and soft, become sweet, and have a fine flavor. This tree is found from New York to Louisiana, rare north of the 42d degree of latitude, common in the south; more common in the plains than in the mountains.

The bark is astringent, styptic, tonic, corroborant, antiseptic, &c. The ripe fruit is subastringent, antiseptic, anthelmintic, &c. The inner bark is the most useful part: it is extremely bitter, and a good astringent tonic, useful in sore throat, fevers, intermittents, and dysentery. In this last disorder, it is often united with rhubarb. It is much used in Carolina and Tennessee for intermittents. It is also a powerful antiseptic, and equal to the Peruvian bark. It has been useful in ulcers, and ulcerous sore throat. The doses are the same as common tonics, either in substance or extract.

PIMPERNEL. *Anagallis Arvensis.* The herb.

Commonly called red pimpernel. It is an exotic plant, originally introduced into America from Germany, by the Germans in Pennsylvania, by whom it is principally cultivated, the knowledge of its virtues being chiefly confined to them:

The plant has weak, squiare stalks, lying on the ground, with two small and almost round leaves at every joint, one against another, very like chick weed, but no foot-stalks. The flowers stand singly, consisting of five small round pointed leaves, of a pale red color, tending an orange, to which succeed smooth round heads, containing small seed. The root is fibrous and annual.

This herb is highly esteemed by the Germans as an infallible remedy for the hydrophobia. I have witnessed its effect myself, and in every case in which it was employed it proved a complete antidote. Its dose in this disorder is half a table spoonful of the powdered herb, repeating it in eight hours. This will create a profuse sweat usually, and throw out the poison. Its use will be found described in the treatment of hydrophobia.

Pimpernel is also considered valuable in many complaints as a cleansing, anti-poisonous medicine. Formerly it was considered a good remedy against the plague, and other pestilential fevers, being boiled in wine and drank till perspiration was created. It was used inwardly and outwardly for the bites of serpents. Applied as a poultice, it draws out thorns and other extraneous substances from the flesh. The decoction is an excellent wash for cleansing filthy old ulcers.

Pink. The flowers.

This is the common well known garden pink. It possesses considerable medicinal power. The flowers, in decoction, are an excellent remedy for green stools in children. It is a fine carminative and anodyne for the bowels.

Plantain. *Plantago Major.* The root and tops.

The common great plantain. There is a smaller kind known as the common sweet plantain, but its properties are the same.

The great plantain has a fibrous root, sending out long oval leaves, irregularly dentated, of a pale green color, and ribbed, and generally from five to nine in number. The flower stem grows from six inches to a foot high, crowned with a spike of clustered flowers which are very small. It grows plentifully in meadows, pastures, by road sides, and around gardens.

This plant is refrigerant, detergent, and subastringent, and is in considerable repute as an antidote to the bites of venomous serpents and insects. For this purpose the bruised leaves should be applied to the wound, immediately, and the fresh juice drank, in doses of half a table spoonful every hour, as long as necessary.

Many people apply the bruised leaves of this herb to slight wounds, inflamed sores and swellings, with a favorable effect. The juice of the plantain, drank for several days is excellent to remove pain in the bowels, and cleanse the blood. It has also been found beneficial in preventing immoderate overflowings of the menses, and curing the whites, piles, salt rheum, &c. The juice may be employed, or the plantain may be prepared by boiling it in milk.

An excellent external application for the salt rheum is made by boiling one pound of the dry plant in two quarts of beef brine, and one quart of wine, for an hour, when the decoction may be strained and put up for use. The hands and other parts affected with the salt rheum, may be bathed with this lotion four or five times a day, internal remedies being premised at the same time.

Plantain is an ingredient in the valuable "bittersweet ointment."

Rattlesnake Plantain. *Plantago Boiciningo.* The root and tops.

This plant rises six inches in height, leaves five inches long, and about two inches broad; has but one small white flower; root about the size of a goose quill, bent and divided into several branches. It grows in meadows and low pasture grounds.

This species of plantain has been found, by the Indians, to be a sure antidote for the bite of a rattle snake. Whether it possesses any greater efficacy for this purpose than the common plantain is uncertain; but this is pretty well established as a specific. When any person has been bitten by a rattle snake, or any poisonous reptile,

let the bruised leaf be applied to the wound, and a table spoonful of the expressed juice of equal parts of plantain and boneset, be taken every hour till the danger is over.

Pleurisy Root. *Asclepias Tuberosa.* The root.

Also called orange swallowwort, butterfly weed, flux root, wind root, silk weed, &c.

The root is perrennial, large, fleshy, white, crooked, or branched; several stalks, either erect, or procumbent, round, hairy, green or red. Leaves scattered, on shorts tems, hairy, lance-like and obtuse; flowers of a bright or orange color, appearing in July and August. It rises about four feet high, and is one of the most beautiful American plants. It grows chiefly on poor and gravelly soils, and along streams, and is found all over the United States, but more abundantly in the south.

The root when dry is easily pulverized; it is somewhat bitter, but not unpleasant.

Pleurisy root is subtonic, diaphoretic, expectorant, diuretic, laxative, carminative, antispasmodic, &c. It is a valuable popular remedy and a mild sudorific, acting safely, without stimulating the body. It is supposed to act specifically on the lungs, to promote suppressed expectoration, and to relieve the breathing of pleuritic patients. It appears to equalize the circulation, and exert a mild tonic effect, as well as a stimulant power, over the excretories. It relieves difficult breathing, and pains in the chest. It often acts as a mild cathartic, suitable for the complaints of children; and is also useful in hysterics, profuse menstruation, dysentery, &c

But in flatulency, colics, and griping pains in the stomach, its benefits are most conspicuous, in giving quick and effectual relief. It has quickly removed many misnamed "Liver Complaints," under my direction. For these it is best given in powder, a tea spoonful every half hour till relief is obtained.

In a low state of typhus fever it has produced perspiration, when other sudorifics had failed. In inflammation of the lungs, and catarrh, it is always beneficial. It restores the tone of the stomach and digestive powers. It has been given in asthma, rheumatism, syphilis, and even for worms.

An attested publication has lately appeared, in which it is stated that the pleurisy root, taken freely in a strong decoction till it vomits, has cured the bite of a rattlesnake in repeated instances. Taken in that quantity, it creates a profuse sweat, which carries off the poison.

Taken in repeated doses till it creates perspiration, after proper evacuations, it is supposed to be a specific in pleurisy, generally removing it in three or four days.

The common doses are from twenty to thirty grains of the powdered root three times a day; or a gill of the decoction and infusion every few hours.

Poison Vine, or Poison Ivy. *Rhus Radicans.*

This vine has a slender ascending stem and frequently climbs to the tops of our tallest trees. The flowers, which appear in June, are produced along the course of the smaller branches: they are of a light yellow color, and have a delightful odor. The whole of this plant is a most violent poison, and people in the country are frequently poisoned in the feet, hands, and face, occasioning bloating and ulceration, from merely coming into the neighborhood of it.

This plant has been employed internally with great success in curing epileptic fits, and other convulsions, and in eradicating herpetic eruptions. It has also been given with great success in whooping cough. For this purpose four grains of the extract are to be dissolved in four ounces of syrup, of which one table spoonful may be given the child every third hour; which generally abates the cough. From one leaf (consisting of three folioles or leaflets) to three leaves may be taken in infusion for a dose; commencing on the smallest quantity. But the greatest caution is necessary in its administration, for its effect is very different on different constitutions; some being partially poisoned by inhaling the air by which it is surrounded, while others can handle it with impunity.

Perhaps the only purpose for which this plant should be employed, internally, is as a remedy to its external poisonous effects. I remember a circumstance which happened many years since, of which I was an eye witness, which exemplified its effect in this case. A man, laboring in a meadow, was so severely poisoned by the ivy, as to produce a general bloating and disfiguration over his body, which threatened imminent danger. He was advised to take a little of the same ivy internally, as a curative; he did so, and it gave him immediate relief, freeing him from it entirely in two days. The following year the same man was again badly poisoned; and, flattering himself that as so small a quantity as he had taken before, had cured him in two days, a larger quantity would cure him in less time, he eat nearly a handful of the leaves; but the dose was fatal—he died in six days.

Poke Root. *Phytolacca Decandra.* The root and berries.

Also called garget, skoke, coakum, &c.

This is one of the most common North American plants, well known in New England. In the southern states it is called pokeweed. It has a thick, fleshy, perrennial root, as large as parsnips; from this rise many purplish herbaceous stalks, about an inch thick, and from four to seven feet long, which break into many branches irregularly set with large oval sharp pointed leaves, on short stems. These are at first of a fresh green color, but as they grow old they turn reddish. At the joints and divisions of the branches come forth long bunches of small bluish colored flowers, which are succeeded by round depressed berries, of a dark purple color.

The root, which is large and bulbous, is an emetic, cathartic, and discutient. The berries are stimulative, sudorific and pectoral.

A tincture of the ripe berries in brandy or wine, is a popular remedy for rheumatism, and similar affections. The extract or juice of the ripe berries has been employed in scrofula, and cancerous ulcers have been greatly benefitted by its application. The juice of the leaves, however, is more effectual. In those rheumatic affections proceeding from the use of mercury, it is said its virtue far exceeds that of opium, or even guaiacum. Cutaneous eruptions have often been removed by it.

For the purposes of an emetic, one ounce of the dry pulverized root may be infused in a pint of Madiera wine for a week; two spoonsful of this will operate kindly as an emetic.

According to the experience of Dr. Kollock, of Savannah, this plant may be relied on as an effectual remedy for the syphilis in its various stages, without the aid of mercury; and he employs it with much confidence, both internally, and externally in rheumatisms and cutaneous eruptions.

The roots are sometimes applied to the hands and feet of patients in ardent fevers. The extract is used with great efficacy in discussing indolent tumors, and in healing various kinds of ulcers.

For medical purposes the leaves should be gathered in July, before they turn red, when they may be dried and pulverized for use; or an extract may be made from them at this time, by evaporating the expressed juice to a proper consistence. An ointment is also made by boiling the leaves with lard. The root should be gathered in November, cut in small pieces and dried.

Poplar. *Populus.* The bark.

The common poplar, or aspen. The bark, in decoction, is said to be a good vermifuge, and is detergent and purifying to the blood.

Poppy. *Papaver Somniferum.* The flowers, and extract.

The common white and red poppy, cultivated in our gardens. From these may be obtained, by all who will take the trouble, the genuine opium. It may be collected by making an incision in the external rind of the poppy head, as the blossoms fall off, scraping the juice off as it oozes out, and drying it in the sun.

Poppy flower leaves make a very soothing poultice to painful inflammatory affections, particularly of the eyes. The country women make great use of them for all the purposes of opium, and particularly for keeping children quiet, and disposing them to sleep.—This, however, is a bad custom, being frequently carried so far as to stupify the child, and injure his intellects.

PRICKLY ASH. *Xanthoxylum Fraxineum.* The bark and berries.

This is a prickly shrub, found in the northern, middle and western states, in woods, on banks of streams, and in shady situations. This is an inferior species of the toothach tree of the south.

The bark is said to be an effectual remedy for the chronic rheumatism. Taken in full doses, it produces a heat in the stomach, a tendency to perspiration, and a relief to rheumatic pains. Twenty grains can be taken three times a day in powder, or an ounce may be boiled in a quart of water, and the decoction taken in twenty-four hours. It is generally used in combination with sarsaparilla, and other articles, forming a syrup.

The berries are esteemed a good remedy in intermittent fevers, and in colics; they may be used in a spiritous or watery infusion; and in agues, after proper evacuations, may be drank during the interval of the fits, which will generally break them in three or four days.

PRICKLY PEAR. *Sedum Acre.* The bulbous leaf.

This curious plant has a large bulbous leaf or pear, as large and thick as the hand, covered with fine prickles which are almost imperceptible, but very annoying. It grows on rocks, and will exist in the open air without root.

It is said to be of great service in the cure of malignant ulcers of the legs, and efficacious in the cure of corns. Take the pear while green, scrape off the inner soft mucilage, and apply it to the sore twice a day until cured. A decoction of it in milk has been found of great benefit in scorbutic humors, cancers, and scurvy. A large handful of the pear, cut in slices, and boiled in a quart of new milk, may be taken in a dose of a gill every other morning.

PRIDE OF INDIA, OR CHINA. *Melia Azedarach.* The berries and bark of the root.

This tree is an exotic, but is now naturalized in the states of Carolina and Georgia, where it is valued for the beauty of its foliage.

This tree has also obtained considerable repute for its medicinal properties. Dr. Kollock recommends it as a vermifuge of efficacy; and says it is in general use among the planters, often succeeding when common means fail. The common form is that of decoction. A large handful, or about four ounces, of the bark of the fresh root is boiled in a quart of water to a pint, of which from half an ounce to an ounce may be given every two or three hours, till it operates. Given in this manner, its operation is powerful, sometimes both vomiting and purging. But in the months of March and April, when the sap is ascending, the bark is much stronger, sometimes causing dilatation of the pupil, stupor, &c. but passes off without any perceptible injury to the system.

The dried berries of this tree have been advantageously employed

as an anthelmintic in Carolina; children being allowed to eat them at leisure.

Ground Pine. *Teucrium Champepitys.* The tops.

This is a low evergreen hairy plant, shooting forth long, slender branches, with pine-like leaves, and trailing on the ground. It is often used to decorate churches on the holidays.

Ground Pine, in decoction, is detergent, aperient, corroborant, diuretic, and is particularly serviceable in female obstructions and paralytic disorders. It relieves strangury and visceral obstructions; excites and strengthens the womb, acting as an emmenagogue; drank continually, it relieves rheumatic pains, sciatica, palsies, cramps, &c.; good in dropsy, jaundice, and phlegmatic dispositions; and forms an useful wash for foul sores.

Prince's Pine, or Pipsissawa. *Chimaphila Umbellata.* The tops.

The plant rises from four to six inches high, with a slender stalk, set thick with straight, oval notched leaves, standing closer at the top. The leaves and plant retain their shape when dried, shrinking very little. Late in the fall a species of nut is found on the top of the stalk, of the size of a small pea, containing a husky seed. It is evergreen.

It is highly recommended for curing chronic rheumatism, gout, sciatica, and similar affections; for relieving, and if persevered in, entirely curing gravel and gravelly obstructions of the urine; and for all the purposes of cleansing the humors, and purifying the system.

A pound of the dried herb may be tinctured in a gallon of spirits, and a wine glassful taken three times a day in the rheumatism. For other complaints it may be prepared in decoction.

Pumpkin Seeds. The oil.

The expressed oil of pumpkin seeds is, perhaps without exception, the most certain and efficient diuretic we possess. I make great use of it. The dose may be from six to twelve drops three or four times a day, or oftener if required. It gives quick relief in cases of spasm upon the urinary passages. It relieves scalding of the urine. When the oil cannot be obtained, the decoction may be substituted.

Purslain. *Portulaca.* The tops.

This plant is well known to every housewife in the country, growing spontaneously in their gardens, and is used for greens. The stalk is vine-like, growing a foot or more in length, with a smooth reddish, brittle stem, and fleshy, thick leaves.

This plant possesses a large portion of succulent mucilage, is sub-astringent, febrifuge, and useful in gonorrhœa. It should be taken freely, in decoction.

Quassia. *Quassia Excelsa.* The wood, bark and root.

This tree is a native of the West Indies, and of South America. It derives its name from a negro named Quassia, who employed it with uncommon success as a secret remedy in the malignant epidemic fevers of Surrinam.

Quassia is one of the most intense, durable and pure bitters known. Its infusion, tincture, or decoction, are almost equally bitter, and yellowish. It is an excellent tonic, antiseptic and febrifuge; being one of the least heating drugs, it is found very serviceable in exciting an appetite for food; expelling flatulency; assisting digestion; and particularly in removing costiveness when occasioned by weakness of the bowels. It is very beneficial after fevers.

It is usually exhibited in infusion, in proportion of three or four drachms of the wood to twelve ounces of water, of which one or two table spoonsful may be taken at a dose, and frequently repeated.

Queen of the Meadow. *Spirea Ulmaria.* The root.

Also called meadow sweet.

This beautiful plant rises four feet high; has smooth, reddish stalks; leaves long, spear-shaped, and opposite; flowers purple. It grows in hedges, and on the sides of meadows throughout the United States.

The root is a most powerful diuretic. In suppressions of urine, and in dropsy it is used with great benefit. It has frequently cured the gravel.

For the dropsy, boil eight ounces of the bruised roots in four quarts of water to two; and after the necessary evacuations, commence by giving a tea cupful of this decoction every two hours, warm, increasing the dose as you can bear it, till the water is evacuated. Then brace up with tonics.

In other cases it may be taken less profusely.

Rattlesnake Root. The root.

This name has been applied to several different plants, in various parts of the United States; but that which I have known by that name, and intend here to designate, has three radical leaf stems the first year, of about six inches in height, with a broad three-cornered leaf to each; the second year a large reddish stalk shoots up, from two to four feet high, bearing seed. The root, the first year, (when it should be gathered) is about the circumference of the little finger, bulbous, and milky. I have found it in different parts of the state of New York.

This root is preferable to any thing else I have ever known for destroying all kinds of canker in the mouth and bowels, particularly in children. I presume it might be applied to other antiseptic purposes with equal advantage. As much as will lie upon a sixpenny piece may be steeped to a wine glassful of water, sweetened, and a tea spoonful given at a time, to children, occasionally washing the mouth with it.

The Seneca snake root is also called rattlesnake root, in some parts.

Rhododendron. *Chrysanthus.* The bark.

This shrub rises near eighteen inches in height; leaves oblong, rigid, reflected at the edges, opposite below, clustered above like a rose, of a deep green color; flowers in umbels, of a bright yellow color. It grows on the mountains in Canada and Nova Scotia The leaves when dry, have no smell, but a rough, bitter, astringent taste.

It possesses a stimulant narcotic principle, increases the heat of the body, excites thirst, and produces an increased discharge of the secretions and excretions. It is recommended as a sure and speedy cure for the chronic rheumatism. Four ounces of the dry bark may be steeped in six quarts of water for twelve hours, and a table spoonful of this taken every night and morning, increasing the dose according to its effect, to half a pint twice a day. Liquids must not be taken during its operation, lest it induce vomiting.

Rhubarb. *Rheum Palmatum.* The root.

The true rhubarb is a native of China, and the East Indies; but it is now cultivated in Turkey, Russia, and other countries. The Turkey rhubarb is brought in roundish pieces, perforated in the centre; externally of a yellow color, but on being cut, they appear variegated with reddish streaks. The Chinese rhubarb is imported in long pieces, which are harder and more compact than the Turkey rhubarb.

The general qualities of good rhubarb are, its having a whitish or clear yellow color; being dry, solid, compact, and moderately heavy: brittle, easy to be pulverised, forming a powder of a fine bright yellow, having a bitterish, and somewhat astringent taste.

The principal constituent of rhubarb is extractive matter, soluble both in alcohol and water. The virtues of this root are destroyed by roasting, boiling, and in forming the extract.

Rhubarb is justly prized as a mild cathartic, and may be safely given to children, invalids, and delicate women, in doses of from ten to twenty grains, though in irritable, hysterical and phthisical habits, it is apt to occasion gripes, and aggravate febrile symptoms: hence, it is not so proper to be given in the first stage of dysentery, as it may increase the inflammation of the bowels: but, after the fever is suppressed, and the disease become chronic, small doses of rhubarb are attended with the best effects.

Besides its purgative quality, it is celebrated as an astringent, by which it strengthens the tone of the stomach and bowels, and proves useful in diarrhœa, and disorders proceeding from laxity. It operates more powerfully when administered in substance, than in any other form. The dose for an adult is from a scruple to a drachm. The infusion is considerably weaker than the powder, and requires double the quantity. In the form of tincture, its principal use is as a stomachic and tonic.

There are other plants growing in the western states, called rhubarb, which have properties similar to the imported; and there can be no doubt that our climate is congenial to its growth, and considering the great value of the medicine, its cultivation ought to be attempted. The pie plant is a species of rhubarb.

Rose Willow. *Salix Rubra Rosalis.* The bark of the root.

This tree is about the size of a small apple tree, and covered with a greenish colored bark, and very red within; the flowers resemble a bunch of roses, from whence it derives its name. It grows near brooks, along the banks of rivers, and on upland meadows: it is known throughout the United States by the name of red rose willow, which distinguishes it from the black willow, or the puss willow, which grows in swamps and along the sides of moist meadows.

The bark of rose willow is an excellent tonic and astringent. It is very beneficial in strengthening and bracing up weakly women, laboring under the whites, relaxation, bearing down, &c.; and likewise in restraining immoderate flowing of the menses, and is used with considerable benefit in intermittent fevers, for which purpose it answers all the purposes of Peruvian bark.

For use, one pound of the bark may be boiled to three quarts; to which add three pints of port wine, and four ounces of loaf sugar. Dose, a tea cupful three times a day as a tonic, &c. to be continued till well. It is equally useful in gleets when the pure decoction may be used for injection.

Rose. The flower leaves.

Roses are principally employed for purposes of perfumery: but they are applicable to many purposes of medicine. They are astringent and tonic, and beneficial in allaying inflammations, when applied in the form of decoction, fomentation, or poultice. For inflamed eyes they are excellent.

Rosemary. *Rosmarinus Officinalis.* The flowering tops.

Rosemary is a shrubby perrennial, which grows wild in the south of Europe, and is cultivated in gardens. It has a fragrant smell and a warm, pungent, bitterish taste, approaching to those of lavender: the leaves and tender tops are the strongest; the flowers themselves are considerably the weakest, but most pleasant. From the

leaves, tops and flowers of this plant an essential oil is prepared; or, when distilled with spirits of wine, they afford the celebrated *Hungary water*.

These liquid medicines are esteemed excellent cephalics, in nervous and hysterical affections, and have been found eminently serviceable in apoplexies, palsies, and vertigoes, in which cases they are sparingly applied to the temples and forehead.

GARDEN RUE. *Ruta Graveolens.* The herb.

Rue has a strong ungrateful smell, and a bitter, hot, penetrating taste. It is a powerful stimulant; and like other medicines of the fetid kind, possesses attenuating, deobstruent and antispasmodic powers. The dose of the leaves is from fifteen grains to two scruples.

SAFFRON. *Crocus Sativus.* The summit of the pistils, called saffron.

Saffron is a bulbous rooted perrennial plant, cultivated in gardens. Its smell is pleasant and aromatic, but narcotic; the taste a fine aromatic bitter, and it immediately gives a deep yellow color to the saliva, when chewed. The active matter is equally extracted by alcohol, water, proof spirits, and vinegar.

Saffron is a valuable plant, and is highly esteemed, as it exhilirates the spirits when taken in small doses; but if used in too large portions, it produces immoderate mirth, and all the consequences resulting from the abuse of spirituous liquors. It is considered an excellent remedy in hysteric depressions originating from spasms, or in obstruction of the uterine secretions: its principal use, however, at the present time, is to prevent the striking in of eruptions and the matter of the scarlet fever, and similar diseases.

SAGE. *Salvia Officinalis.* The herb.

The leaves of sage have a peculiar aromatic smell, and a warm aromatic taste, with some degree of bitterness and astringency.

In its effects, sage agrees with other aromatics. It is stimulant, carminative, diaphoretic and tonic. In cold phlegmatic habits, it excites appetite, and proves serviceable in debilities of the nervous system. The best preparation for these purposes is an infusion of the dry leaves, drank as tea: watery infusions of the leaves with the addition of a little lemon juice, prove an useful diluting drink in febrile disorders, being sufficiently agreeable to the palate.

SARSAPARILLA. *Smilax Sarsaparilla.* The root.

This root is principally brought from the Spanish West Indies, and Central America. It is, however, found in abundance on the

Ohio river, and in considerable quantities in other parts of the United States, though it is inferior in strength to that procured from the tropical climates. The root consists of a great number of long strings, hanging from one head. The long roots are of a blackish color outside, and white within, about the thickness of a goose quill.

They have a glutinous, bitterish, not ungrateful taste, and no smell. About two centuries ago it was introduced into Spain as an undoubted specific in syphilitic disorders; but owing to the difference of climate, or other causes, it has not answered the character which it had acquired in the Spanish West Indies. It is now considered as capable of improving the general habit of body after it has been reduced by the continued use of mercury. It is under these circumstances that its most beneficial effects are perceived, as it generally frees the patient from the distressing sequel to a mercurial course. The root of sarsaparilla is sometimes employed with success in rheumatic affections, scrofula, and cutaneous complaints, where an acrimony of the fluids prevails.

Sarsaparilla is usually combined with sassafras, guaiacum, liquorice, and other substances in a decoction, or syrup.

Sassafras. *Laurus Sassafras.* The wood, root, and its bark.

This tree is a native of North America. The wood, root and bark are used; they have a moderately fragrant smell, and a sweetish aromatic taste. Sassafras is a warm aperient and strengthening medicine; it has often been successfully given in the form of infusion and decoction, for improving the tone of the stomach and bowels, in persons whose humors were in a vitiated state. The essential oil is highly stimulating and heating, and must be given only in very small doses, being a sudorific and diuretic remedy. The bark is useful in intermittents: and the oil is said to be efficacious, applied externally to wens and indolent swellings.

Savine. *Juniperus Sabina.* The leaves.

This is an evergreen shrub, which has rather small prickly leaves, and produces blue berries, only after it has arrived at a considerable age. Its stem attains the height of seven feet, and is apt to grow in a reclining posture. The wood is of a beautiful reddish shade, resembling mahogany. Savine leaves posses a bitter, acrid taste, and their smell is so disagreeable, and powerful, that it expels moths and similar vermin. When distilled with water, these leaves yield an uncommonly large proportion of essential oil.

Savine is a warm, stimulating medicine, capable of producing sweat, and increasing all the secretions, but apt to excite hemorrhage, especially from the womb. It has long been considered as a powerful emmenagogue, and is frequently used to restore obstructed menses, when the leaves may be given in doses of from a scruple to a drachm, in powder, twice a day. But it is too acrid and heating in

plethoric habits, and should be employed with caution, in those cases only which proceed from a relaxed state of the solids.

The savine oil is one of the most violent emmenagogues, and ought therefore to be used with the greatest caution in obstructions of the uterus or other viscera, proceeding from laxity or weakness. Externally, the leaves are applied in the form of powder or infusion, to warts, carious bones, and old ulcers; and in cases of itch, gangrene, and scald head.

Scabious. *Erigeron Philadelphicum.* The herb.

Called also skevish fleabane, scabish, cocash, frostweed, squaw-weed, &c. Its roots are perrennial, yellowish, formed by many branching thick fibres. The stalks rise two or three feet, sometimes, four or five in number, straight, simple, branched with small umbels at the top. Leaves oblong, obtuse, alternate, remote. larger at the foot of the stalk, and decreasing in size upwards. Flowers numerous, radiate, half an inch in diameter, with yellow disk, and rays white, bluish, or purplish, in shape similar to a daisy flower. It is found in fields, and dry meadows, sometimes covering them entirely. There are several species of them, and they are generally considered pernicious and troublesome weeds, on a farm.

These weeds are valuable medicines, possessing very active powers; they are diuretic, sudorific, astringent, styptic, emmenagogue, pectoral and tonic, in a high degree, and act in a mode peculiar to themselves, by means of their acrid quality. Their oil is so powerful, that two or three drops dissolved in alcohol, have arrested suddenly uterine hemorrhagy. The diseases relieved or cured by these plants, are chronic diarrhœa, dysury, inflammation of the kidneys, gravel, gout, dropsy, suppressed menses, dry coughs, cutaneous eruptions, hemorrhagies, dimness, rash, cold hands and feet. The whole plants are used fresh or dried, in infusion, decoction, or tincture.—Their extract is rather fœtid, more astringent than the infusion or tincture; but less than the oil, which is one of the most efficient vegetable styptics. This extract, and a syrup of the plant, have been given usefully in dry coughs, bleeding at the lungs, and other internal hemorrhages. The dose is from five to ten grains of the extract, often repeated.

As a diuretic, the infusion and tincture are preferable and more active; they have increased the discharge of urine three fold. A pint or two of the former may be taken daily, and it agrees well with the stomach. The dose in tincture is from three to four drachms daily; it is made by digesting an ounce of the leaves in a pound of proof spirits. They are beneficial in all diseases of the bladder and kidneys, attended with pain and irritation, in which they give speedy relief. Also in all compound cases of gravel and gout. They have cured diarrhœa, from their astringency, without any auxiliary.

They are used externally, in wounds, also in hard tumors and buboes, which a cataplasm of the fresh plants dissolve and disperse.—But the most valuable property is the astringent and styptic power of the oil, which has saved many lives in parturition and uterine hemorr-

hage. A saturated solution of the oil in alcohol is applied, and a little given in a spoonful of water; and an instantaneous stop takes place to the bloody flow.

SCROFULA PLANT. *Erythronium Flavum.* The root and leaves.

There are many varieties of this species of plant, which are known by different names, in different parts, as dog violet, rattlesnake violet, lamb's tongue, adder leaf, adder's tongue, snow drop, snake-leaf, &c.

The plant generally known by the above name, has a solid, pyramidal, bulbous root, deep in the ground, white inside, covered outside with a brown, loose tunic, sheathing the base of the stem. Stem partly under ground, with two leaves, appearing radical because near the ground; the whole plant smooth and shining; stem white below, greenish purple above, slender, from five to twelve inches long. On the first year of the growth, only one leaf is produced, and it is commonly broader: the second year, two leaves, a little unequal in size, from three to seven inches long, oval, lance-like, shining, smooth, veinless, and with a single nerve, often spotted by large irregular spots, of a dull brown above, pale and unspotted below. A single flower at the end of the stem, one inch long, of a yellow color, sometimes tinted with red, nodding. Some variety of this species is found in every part of the United States. They all possess the same properties, as well as a striking resemblance.

The root and bulb of the leaves are emetic, emollient, suppurative, and antiscrofulous when fresh, nutritive when dry. The dose to vomit is twenty-five grains of the fresh root, or forty of the recent dried root. But its greatest value consists in its being a remedy for the scrofula. This property it possesses is but lately discovered, but experience has established it in many instances. The fresh roots and leaves are stewed in milk, and applied to the scrofulous sores as a poultice, healing them speedily; or the fresh bruised leaves may be laid on, renewing them often. The infusion is to be drank at the same time.

SCULL-CAP. *Scullelaria Gallericulata.* The leaves.

This is a native perrennial plant, rising about two feet high, growing on the banks of rivers and the borders of ponds; flowering in the months of July and August. Its stem is square and branched; leaves heart-shaped, narrow-pointed, on short foot stalks, scalloped, and opposite; flowers blue, in pairs, on pedicles growing from the axilla of the leaves, and pendulous. Scull-cap is bitter, and has a garlic smell.

This plant was considered of no botanical account, till the recent discovery of its being a specific antidote to the bite of a mad dog. This property alone renders it invaluable. The mode of its application will be found described in the article on hydrophobia. The leaves should be gathered about the last of July, dried in the shade, pulverized and put in bottles.

GARDEN SCURVY GRASS. *Cochlearia Officinalis.* The plant.

This is an American plant growing on the sea shore, and in mountainous situations, and is sometimes cultivated in gardens. It possesses a considerable degree of acrimony, and by distillation an essential oil is obtained, the smell of which is so strong as to make the eyes water.

The fresh plant is a gentle stimulant and diuretic, and is chiefly used in the cure of the sea scurvy. It is employed externally as a gargle in sore throat and scorbutic affections of the gums and mouth. It may be eaten in substance to any quantity, or the juice expressed from it, or may be infused in wine, or its virtues may be extracted by distillation. It is said to be a powerful remedy in the moist asthma, and in what Sydenham calls the scorbutic rheumatism.

SENECA SNAKEROOT. *Polygala Senega.* The root.

Seneca is a perrennial plant, which abounds in nearly all the United States, particularly in Virginia and Pennsylvania. The stem nearly a foot in height; leaves sharp pointed, alternate, and on short foot-stalks; flowers small, white, and terminal. The root is about the thickness of the little finger, variously bent and contorted, and appears as if composed of joints, whence it is supposed to resemble the tail of the rattlesnake.

This root was introduced nearly an hundred years since, first in Virginia, and particularly as a specific for the cure of the bite of the rattlesnake. It is an active stimulus, and increases the force of the circulation, especially in the pulmonary vessels. It is therefore found useful in typhoid inflammation of the lungs, but is apt to disorder the stomach, and induce diarrhœa. Some have employed it in dropsy with success. There are examples of its occasioning a plentiful discharge by stool, urine, and perspiration; and by this means removing the disease after the common diuretics and hydragogues had failed.

It sometimes induces salivation, and possesses diuretic, emetic, cathartic, expectorant, and diaphoretic powers. It is of great utility as a remedy for that fatal disease, the *croup*, when it should be given in decoction; the strength must be determined by the physician: it must be so strong as to act sensibly on his own mouth and throat, in exciting coughing. Half an ounce of the root of seneca, simmered in a close vessel, in half a pint of water till it is reduced to four ounces, will be sufficiently strong, in most cases. A tea-spoonful of this to be given every hour or half hour, as the urgency of the symptoms may demand; and during these intervals, a few drops occasionally, to keep up a sensible action of medicine in the mouth and throat, until it acts as an emetic and cathartic. By these means, in the course of two, four, six or eight hours, a membrane is often times discharged by the mouth, one, two, or three, inches in length.

Seneca has been usefully employed in the decline of pleurisies and catarrhs to promote expectoration. In suppressed coughs of aged

persons and in asthma, it is doubtless useful: a gentle and constant stimulus on the throat should be kept up in these diseases. It has also been exhibited as a powerful remedy in cases of female obstructions. For tincture:—half an ounce of the root to half a pint of spirit; digest for ten days and strain: dose twenty to thirty drops, two or three times a day.

Senna. *Cassia Marilandica.* The leaves.

The American senna has a woody, black, fibrous, contorted, perrennial root; stems numerous, smooth, upright, from three to six feet high, cylindrical and simple: leaves alternate, not many, large horizontal, leaf stem having a gland at the base, bearing from eight to ten pairs of folioles or leaflets, which are smooth, ovate, obtuse, and equal: flowers of a bright golden yellow, forming a parnicle, on short stems, each having from five to fifteen flowers. Found in most parts of the United States, in rich, moist, and alluvial soils, near streams principally.

All the sennas are simple cathartics; some kinds occasion gripings, and yet are not so active as rhubarb or jalap. This kind operates with mildness and certainty at the dose of an ounce in decoction. Both the leaves and pods are employed: the infusion is weaker. They may enter into compound laxatives and cathartics.

Septfoil. *Tormentilla Erecta.* The root.

Tormentil is perrennial, and found wild in woods and on commons; it has long slender stalks, with usually seven long narrow leaves at a joint. The root is usually crooked and knotty, of a blackish color on the outside, and a reddish within.

This root has an austere, styptic taste, accompanied with a slight kind of aromatic flavor: it is one of the most agreeable and efficacious of the vegetable astringents, and is employed with good effect in all cases where medicines of this kind are proper. It has been used in diarrhœa, in the form of decoction, and in intermittent fever in substance, in a dose from half a drachm to a drachm.

Shrub Yellow Root. *Xanthoriza Apifolia.* The stem and root.

Is a native plant of North Carolina; the stem three feet high, and somewhat thicker than a goosequill; root from three to twelve inches long, and about the diameter of a man's little finger, sending off numerous scions; leaves are placed alternately, having long petioles, and pinnated, terminating in an odd one, leaflets sessile, and deeply lacerated on the edges. The flower stems are branchy, and placed immediately beneath the first leaves, which cause the flowers to appear before the leaves, very early in the spring. The stem and root are of a bright yellow color, and possess a strong, bitter taste.

The xanthoriza is a strong and pleasant bitter, very nearly allied

to the colombo root, and promises to become a valuable addition to the American materia medica. It is preferable to many of our native bitters, and may be used in powder, in doses of two scruples to an adult, in many of those diseases in which bitters are indicated, but it is generally combined with other remedies. It is a medicine which sits easy on the stomach, and produces no disagreeable effects.

Skunk Cabbage. *Pothos Fœtida.* The root and leaves.

The first appearance of this singular plant is the flower. After the flower is arrived to a state of perfection, the leaves appear at a small distance from the flower stalk in a conic form, very closely rolled together, growing very large and crimped. Common in swamps and low meadows. Flowers in April or May, and is exclusively a native of North America. The vulgar name by which it is generally known, is taken from its very rank, disagreeable smell, nearly resembling that of a skunk.

The roots dried and powdered are an excellent medicine in asthmatic cases, and often give relief when other means are ineffectual. It may be given with safety to children as well as adults: to the former in doses of four, five, or six grains, and to the latter in doses of forty grains and upwards. It is given in the fit, and repeated as the the case may require; and after the paroxysm is gone off, the dose may be repeated three or four mornings in succession, then miss as many, and repeat again; thus continuing the medicine till the patient is perfectly recovered.

Skunk cabbage is not only a good antispasmodic in all cases where such are indicated, but it is also a powerful emmenagogue, anthelmintic, and a valuable remedy in dropsy, in spasms, rheumatism, palpitations, &c. It is frequently used in childbed to promote the birth. The seeds of this plant are supposed to possess more efficacy in asthma than the root. For expelling worms, the pulverized root should be administered in molasses for a sufficient length of time, following it up with a purge.

Virginian Snakeroot. *Aristolochia Serpentaria.* The root.

This medicinal plant is a production of the United States exclusively. Root perrennial, knotty, brown and very fibrous; fibres long, small, and yellow when fresh; stalks round, slender, weak, jointed, less than a foot high, bearing from three to seven leaves, and from one to three flowers; leaves alternate, oblong or lance-like, base heart-shaped, and sharp, surface smooth, sometimes undulate; flowers nearly radical, solitary, on long hanging stems, of a purplish or reddish color. There are many varieties of this class. They are found in shady woods from New England to Florida and Missouri. The root has an agreeable penetrating aromatic smell, somewhat similar to valerian and spruce.

Its properties are diaphoretic, tonic, anodyne, antispasmodic, cordial, antiseptic, vermifuge, carminative, and a powerful stimulant

of the whole system. It was first introduced in materia medica as a remedy against snake bites: it acts then as a sudorific and antiseptic. It is useful in low stages of fever, to support strength and allay irregular actions. It is an excellent auxiliary to tonics in intermittents, enabling the stomach to bear them, and increasing their effects. In remittent fevers it is preferable to bark. It is a deservedly popular remedy in the country, in infusion, for pleurisy, eruptions, cachexy, catarrh, rheumatism, &c. acting as a sudorific. In pleurisy it has been found highly serviceable; in bilious complaints it checks vomiting, and tranquilizes the stomach. In typhus fevers it has beneficial effects, promoting perspiration, checking mortification, and abating the symptoms.

The snakeroot may therefore be deemed a valuable and active medicine; which may be profitably associated with tonics, and also with camphor, opium, valerian, &c. to increase their action. It may be substituted for these last, in many cases. The doses of the powder are from ten to thirty grains, often repeated, or an ounce of the warm infusion every three hours. Wine is an excellent vehicle for it in fevers.

Snakehead. *Chelone Glabra.* The herb.

This is found in brooks and wet ground, where it forms bunches, and rises two or three feet. Stem smooth, and bluntly four-cornered. Leaves opposite, lance-like, sharp, dark green and polished above; flowers in a terminal spike, a few only expanding at once, large, white, inflated, contracted at the mouth, not unlike the head of a serpent. Found in the eastern, middle, and probably the southern states.

The only purpose to which I have appropriated this herb is that of a vermifuge, and for that I have found it to be very safe and effectual, in common cases. I think it has no superior, rarely failing to expel the worms. It should be administered in infusion, continued for a time, and followed by a suitable purge. An ounce of the dry herb is sufficient in any case for children.

Sneezewort. *Helenium Autumnale.* The herb.

Also called sneezeweed, oxeye, false sunflower, yellow star, &c. Its root perrennial and fibrous. Several stems from three to seven feet high, erect, angular, branched and corymbose, covered, together with the leaves, with a very short and dense hair; leaves alternate, sessile, lance-like, sharp, unequally serrated, and dotted in small pits: flowers on scattered shafts, of a golden yellow, large, one or two inches in diameter, resembling a sunflower. Found all over the United States, in wet meadows, damp fields, on the banks of streams, &c. Its taste is bitter, and a little pungent.

It is a tonic, febrifuge, and errhine; but it is for this last purpose that it is chiefly used in the country. The whole plant, reduced to powder will excite sneezing; but the flowers, and particularly the central florets, are powerful sternutatories: a very small pinch of

their powder produces a lasting sneezing. It is highly esteemed by those acquainted with its effects, and is substituted for the more acrid errhines, either alone, or united to other ingredients. It may be used in diseases of the head, deafness, headach, rheumatism or congestion in the head or jaws, &c. The shocks of sneezing are often useful in those cases, when other remedies can hardly avail.

Solomon's Seal. *Convallaria Polygonatum.* The root.

This plant rises six or eight inches in height; leaves lance-like, and of a dark green color; flowers in umbels, and hang on the lower side of the leaning stalks, producing red berries. It grows on the sides of meadows, high banks and mountains, in every part of the United States.

The roots are astringent, incrassant and corroborant; the flowers, berries and leaves are acrid and poisonous. The sweet mucilage of the roots applied as a poultice, is good in inflammations and piles.

A handful each of Solomon's seal and comfrey root, bruised and infused in two quarts of wine, is a valuable remedy for the whites, and other female weaknesses, when taken in quantity of a wine glassful three times a day.

Soapwort. *Saponaria Officinalis.* The root and leaves.

Rises a foot in height; leaves entire, pointed, and furnished with three ribs; flowers numerous, terminal, large, and of a pale pink color. It grows in low moist swamps and meadows, and flowers in July and August. A decoction of the root produces a soapy froth not injured by acids.

This plant is said to have cured the jaundice, and to remove obstructions of the liver, and is by some considered superior to sarsaparilla in the cure of the venereal disease. Two ounces of the dry root, and four ounces of the leaves, may be boiled down to two quarts, and strained; of this a half pint may be taken four times a day.

Sorrel Tree. *Andromeda Arborea.* The leaves and wood.

Also called sour tree, sour wood, sour leaf, &c.

This is a small tree, from fifteen to forty feet high: branches slender: the bark of a light brown, of the old branches reddish, of the young shoots green; leaves large, from three to six inches long; flowers white, terminal, one third of an inch long, forming a loose panicle, composed of many stems, bearing each from twelve to twenty flowers. Found in the Southern states, and seldom met with north of Virginia and Kentucky.

The leaves and wood are a fine astringent acid, refreshing, cooling, allaying thirst, and anti-febrile. A decoction of the leaves mitigates the ardor of fevers, and helps their cure. It is useful in all cases, where a refrigerant and astringent is needed: a kind of le-

monade can be made with it. It may be substituted for sumac and cranberries.

Sheep Sorrel. *Rumex Acetosa.* The leaves.

Sheep sorrel is common and well known, growing in old pastures and cornfields, throughout the United States.

An infusion of the leaves is refrigerant, useful in all inflammatory habits, as well as in the scurvy. Sorrel leaves, wrapped up and roasted, and applied to indolent tumors, wens, biles, inflammations, &c. brings them to a suppuration very quick. It will be found quite serviceable in such cases.

Southern Wood. *Artemisia Abrotanum.* The herb.

This plant rises three feet high, with vertical branches; leaves numerous, irregularly bipinnated, long, narrow, sharp, bristly; flowers very minute, of a greyish color, in close terminal spikes, and mixed with leaves. It is perrennial, and chiefly cultivated in gardens.

Southern wood is stimulant, detergent, sudorific, discutient and antiseptic. The powder has been given to open obstructions of the viscera, and to destroy worms, (this being a species of the wormwood.) It is also applied externally, in ointments and fomentations, for cutaneous eruptions, hard tumors, preventing the hair from falling out, and causing it to grow. For worms, from one to two tea-spoonsful of the powder may be taken in molasses morning and evening.

Male Speedwell. *Veronica.* The leaves and root.

This plant is cultivated in gardens and needs no description.

It is aperient, pectoral, diuretic, and has been found beneficial in disorders of the breast, both catarrhous and ulcerous; it purifies the blood and juices. An infusion of the leaves drank as tea, promotes urine, strengthens the stomach, removes melancholy, gravelly complaints, bloody urine, hoarseness, and colic.

It may be taken in infusion, or in powder of the root, a tea spoonful twice a day.

Spikenard. *Aralia Nudicaulis.* The root.

Spikenard root is perrennial, brown, yellowish, creeping, twisted, sometimes many feet long, the thickness of the finger: one stem and one leaf mostly rising together, and less than two feet high; stem straight, leafless, with three small simple naked umbels at the end; leaf with nine folioles or leaflets, ovate, oblong, and smooth; flowers from twelve to thirty in each umbel, small and yellowish; berries small, similar to elder berries in size. Found from New England to Carolina and Indiana, more common in the north than in the south; grows in deep woods, and good soils. It has a balsamic, fragrant, and warm aromatic sweetish taste.

All the spikenards are popular medical plants throughout the United States. They are healing, pectoral, sudorific, stimulant, diaphoretic, cordial, depurative, &c. The roots and berries are most efficient.

The roots bruised or chewed, or in poultice, are used for all kinds of wounds and ulcers by the Indians. Fomentations and cataplasms are useful for cutaneous affections, erysipelas and ringworms. An infusion or decoction of the same are efficient substitutes for those of sarsaparilla, and even more powerful in all diseases of the blood, syphilitic complaints, chronic rheumatism, local pains, bellyach, &c. As a pectoral, both roots and berries may be used in syrups, cordials, decoctions, &c. and have been found useful in coughs, catarrh, cachexica, languor, pains in the breast, &c. The cordial of spikenard is recommended for the gout, and the juice or essential oil for the earach and deafness.

SPLEENWORT. *Asplenium Trichomanes.* The herb.

This is a small plant, six or eight inches high; leaves upright, numerous and pinnated, similar to brake; the ribs are blackish, leaflets in pairs, gradually diminishing towards the top. It grows in bunches in low woods, near moist meadows and among rocks.

Its leaves are pectoral, aperient and diuretic; they open obstructions of the viscera, promote expectoration, assist urine by cleansing the kidneys, allay pains in the urinary passages, frequently carrying off sand and gravel. It is said this herb has cured the venereal disease.

SQUILL. *Scilla Maritima.* The root, called sea onion.

The squill is a perrennial, bulbous rooted plant, which grows wild on the sandy shores of Spain, Portugal and the Levant. The best sea onions ought to be sound, fresh, and to contain a viscous juice; they are nauseous, bitter, and if much handled are so acrid as to ulcerate the skin. It is more commonly met with in the shops in the form of dried scales, which should be brittle, smooth, clear, but marked with lines, and when chewed should feel tenacious, and taste very bitter. It becomes inert by long drying or exposure.

The squill is a powerful stimulant, promoting the discharge of urine; and if the patient be kept warm, a profuse perspiration. It is chiefly employed in cases where the organs of respiration are clogged, or oppressed with mucus. It has been greatly extolled for its efficacy in dropsical swellings, and in inflammations of the kidneys. If the squill be taken in a large dose it operates as an emetic, and in some cases it produces even strangury, bloody urine, inflammation of the stomach. In smaller doses, however, it proves an useful expectorant, and diuretic, and is peculiarly serviceable in phlegmatic habits, and where the lungs are oppressed with viscid matter.

The dose of squill is one or two grains, two or three times a day; and the most commodious form is that of pill. When mixed with honey into an *oxymel*, it affords an useful medicine in obstinate coughs.

STINKWEED, OR THORNAPPLE. *Datura Stramonium.* The leaves and seeds.

Also called Jamestown weed, Jimson, &c. The root of stramonium is annual, white and crooked; stem erect, from one to eight feet high, branched by forks, round, often hollow, smooth or hairy; leaves alternate at the forks, petiolate, oval oblong, base decurrent, end sharp, forming in its outlines a triangle, edges deeply toothed; flowers axillary, single, on short stems, erect, large white or bluish; fruit a large fleshy head, thorny, with four valves opening at top, containing many black seeds. It is a wandering plant, common to all parts of the world, and spreads with rapidity. It is an exotic, and appeared first in Jamestown, Va. whence its name. The whole plant has a fœtid, lurid and narcotic smell, causing headach and stupor, it has a bitter and nauseous taste. It yields its properties to water and alcohol.

This loathsome weed is one of those bounties of nature scattered almost every where, and possessing energetic medical powers. It is narcotic, antispasmodic, antiepileptic, anodyne, sedative, &c. and externally, refrigerant, detergent, resolvent, &c. It has been strongly recommended in epilepsy, rheumatic pains, tic douloureux, gout and all kinds of pains, mania, convulsions, asthma, St. Vitus's dance, sciatica, &c. and externally for burnings, scaldings, tumors, ulcers, cancers and piles. It sometimes fails from want of care in its administration, or from too great a quantity; it then produces vertigo, confusion of mind, dilatation of the pupil, loss of sight, headach, nausea, faintness, delirium, convulsions, lethargy and death. Vinegar neutralizes it, preceded by an emetic.

The effects of this narcotic when administered internally for medical purposes, and in proper doses, is to lessen sensibility and pain, to cause a kind of nervous shock, attended with some nausea, a feeling of intoxication and suffocation, to have little influence on the pulse, to relax the bowels, &c. followed by a sensation of ease and quiet, which induces sleep.

In asthma, it is seldom more than a palliative, but very useful in the paroxysms. It may be smoked like tobacco; or, which is preferable, the leaves may be burned in a crucible, and the smoke inhaled. It adds greatly to their efficacy in relieving asthmatic spasms, to have them previously prepared by saturating them with salt petre in solution, and then drying them for use. The seeds may also be smoked in the same manner. An infusion or decoction of the leaves or seeds has the same effect. In madness it is frequently of service. For palpitations it is a tolerably certain remedy. In epilepsy and convulsions, it cures the periodical fits, and frequently quells the sudden fits. It is highly serviceable in chronic acute diseases, such as sciatica, syphilitic pains, disease of the spine, cancer, uterine pains, gout, rheumatism, mercurial pains, &c. and in all cases where an antispasmodic is required. In tic douloureux, although not an infallible cure, it has proved itself superior to any other remedy, frequently curing, and always relieving.

Externally, it is a safe and certain remedy for burns, tumors, gout

ulcers, inflammations, and some cutaneous eruptions. The leaves, or their ointment, applied to the parts, promote cicatrization and granulations in the worst ulcers, and afford speedy relief in piles — It is said that the leaves applied to the head, produce sleep and dreams. The plant may be gathered for use at any time, but is best when in blossom. All parts of the plants are efficient; but the seeds are preferable in some instances.

Many preparations are made for internal use, as the powdered leaves, extract, decoction, juice, and tincture. For external use, an ointment is made by simmering one pound of the fresh leaves in three pounds of lard. The doses for internal use are, to begin, very small, viz. one grain of the powdered leaves or extract; one quarter of a grain of extract from the seeds, and fifteen to twenty drops of the tincture. One pound of the seeds affords two ounces of extract, and one pound of the leaves, three ounces.

Succory. *Chicoreum.* The herb.

The wild succory has many long leaves, lying on the ground, with torn edges, and ending in a point. The stem rises from the rib in the middle of the leaf, is hard, round, spreading into many branches set with smaller leaves, and divided at the top, where stand the flowers, which are similar to those that grow in gardens. The whole plant is exceedingly bitter, and much stronger than the cultivated kind. It grows wild about old ruins, and in barren fields.

It is laxative, aperient, attenuant, detergent and corroborant — The juice expressed from the plant has been found beneficial in obstructions of the viscera, jaundice, cachexia, hectic fevers, hypochondriac affections, cutaneous affections, cutaneous eruptions, debility of the bowels, and other chronic disorders.

Common Sumach. *Rhus Glabrum.* The berries, and bark of the root.

There are two kinds of the common upland sumach, one known as the narrow-leaved sumach, the other as the Pennsylvania sumach.— The latter is smooth, and rises to the height of ten or fifteen feet The leaves are feathered, sawed, laneed, naked on both sides, and change to a beautiful red in autumn. The seeds are in large bunches, arranged like the flowers, are red, and covered with a white powder, of an agreeable acid taste.

The two species above mentioned, are considerably astringent.— An infusion of the berries sweetened with honey, is sometimes used as a gargle in sore throats, and for cleansing the mouth in putrid fevers.

The bark of the root is considered a very great antiseptic; in form of poultices for old ulcers, it is hardly equalled by any; in decoction, good for hectic fever and scrofula. It is said to be efficacious in the venereal, combined with the bark of slippery elm and white pine, in decoction, and taken freely.

Swamp Sumach, or Poison Oak. *Rhus Tonicodeudrum.* The leaves.

Swamp sumach has a low shrubby stalk; leaves trifoliate, with pretty large foot stalks, lobate, entire, and somewhat heart-shaped; the flowers come out from the sides of the stalks, in loose panicles are small, and of an herbaceous color. This plant, sometimes called poison wood, is so acrimonious, that the touching of the leaves, or rubbing them on the skin, occasions itching, inflammation, and eruption.

The leaves of this shrub have been given in cases of paralysis, in doses of half a grain or a grain, three times a day with marked success. The first symptom of amendment was always an unpleasant feeling of prickling or twitching in the paralytic limbs; generally operating as a laxative, notwithstanding the torpid state of the bowels of such patients.

The varnish tree, or white swamp sumach, is a still more violent poison than the above.

Strawberry. *Fragaria Vesca.* The fruit.

The common strawberry, although chiefly considered as an article of food, deserves a place among medicines. They are diluent, refrigerant, subastringent, diaphoretic, diuretic, pectoral, &c. They are useful in fevers, gravel, gout, scurvy, and consumption. They are cooling, promote perspiration, give relief in diseases of the bladder, and kidneys, upon which they act powerfully. It has long been extolled in gout and phthisic: persons laboring under these chronic complaints ought to eat them frequently when in season, and use at other times their syrup. Used moderately, they are certainly a valuable medicine in many cases; but an excessive dose of either is, however, liable to produce vomit, or a painful stricture in the bladder, with red urine. They possess also the property of curing chilblains; their water is used in France for that purpose, as a wash. The plant and leaves have nearly the same properties, are less cooling and more astringent. Both have been employed for sore throat, swelled gums, bowel complaints, jaundice, and fevers, in infusion and decoction.

Small, Rough Sunflower. *Helianthus Divaricatus.* The leaves, seeds, and root.

A showy plant, not uncommon in the woods and thickets, flowering in August and September. Stem erect, round, smooth, generally covered with a sea green powder. Leaves opposite, narrow, ovate, rounded at the base, tapering to a long point, slightly serrate, three-nerved, and very rough. Flowers yellow, in the wild plant but few in number, in the cultivated one, numerous. Branches of the panicle either forked or three-parted. It is perrennial. This plant has an agreeable and somewhat spicy odor.

This sunflower is one of the most valuable medicinal plants our country produces. It is carminative, antispasmodic and laxative; and is the most efficacious remedy in bilious colics, that can be administered. In all diseases where carminatives and antispasmodics are indicated, it may be employed with the greatest benefit. The leaves, or the root, (which is the strongest) may be taken in powder, in quantity of ten or fifteen grains every hour, if necessary, or in urgent cases, in a larger dose. The powdered leaves of this plant form the principal ingredient in Hull's celebrated physic.

Tamarinds. A fruit.

The tree producing tamarinds grows both in the East and West Indies.

The pulp of tamarinds, besides its virtues as an acid, proves laxative, when taken to the extent of an ounce and half. It is generally added to other cathartics, which are given in the form of infusion, with the view of promoting their operation and covering their taste. By its acidity, this fruit quenches thirst, and allays immoderate heat.

Tamarisk Tree. *Tamarix.* The bark and leaves.

This tree is commonly known in this country by the name of Tamarack.

The bark of this tree is valuable for its aperient and corroborant virtues in obstructions of the liver: the leaves are employed in jaundice, bleeding at the lungs, and some affections of the skin; also in piles, immoderate menses, ulcers, burns, dropsy, &c. Both should be used in decoction.

Tansy. *Tanacetum Crispum.* The herb.

This herb has a warm bitter taste, not ungrateful to the palate: It is an excellent tonic stomachic, deobstruent, and emmenagogue: and has a favorable effect in hysteric disorders. The leaves and seeds have been in considerable esteem as anthelmintics, and are given in doses of from one scruple to one drachm. The decoction of tansy, or the juice drank in wine, is very useful in strangury and other obstructions of urine, and in weakness of the kidneys.

Thyme. *Thymus Virginicus.* The herb.

An erect plant, with flat topped branches; stem square, downy at the angles; leaves opposite, rigid, very narrow, rounded at the base, and tapering to a long acute point; flowers in numerous small heads, mostly terminal, white, dotted with purple. Found by fences and woods. It has an agreeable aromatic smell, and a warm pungent taste.

Its virtues are said to be resolvent, emmenagogue, tonic and stomachic. It strengthens the lungs, relieves shortness of breath, and expels wind. It is given in the form of decoction.

Tobacco. *Nicotiana Tabacum*. The leaves.

The tobacco plant is a native of America, where considerable quantites are annually raised for exportation. The leaves have a strong disagreeable narcotic smell, and a very acrid burning taste. The active constituent of tobacco is an essential oil, so active that small animals are almost instantly killed, when wounded by a needle dipped in it; and a few drops of this oil taken internally have operated as a fatal poison.

The effects of tobacco are those of a powerful narcotic. Along with severe nausea and vomiting, it reduces the force of the circulation, and occasions extreme muscular debility, with insensibility and cold sweats. In the iliac passion, and in hernia, both the infusion and smoke of tobacco have been employed with the happiest effects, in the form of injection. In cases of abdominal dropsy, and other dropsical affections, it appears to be a valuable remedy, on account of its powerful diuretic qualities. For this purpose it is prescribed in the form of infusion, about eighty drops of which is an average dose, beginning with a less quantity and increasing to a greater, or till by its effect the proper dose is ascertained. It should be given two hours before dinner, and at bed time. In gravelly obstructions of the kidneys, this infusion has been given with astonishing effect.

The decoction of tobacco exhibited in cases of colic, has procured relief almost instantaneously, after other medicines had proved ineffectual. One ounce of the infusion, in half a pint of milk or gruel, is a medium dose in the form of injection for an adult of an ordinary constitution.

As a vermifuge it is deserving of being held in high repute, either taken internally, or the leaves pounded with vinegar and applied in the shape of a poultice to the region of the stomach, or other part of the abdomen. In consequence of this application worms are often discharged, after powerful internal vermifuges have failed.

In the lockjaw, injections of this infusion have been used with success; they not only produce evacuations from the bowels, which are generally obstinately constipated, but from their antispasmodic powers, occasion a relaxation of the violent spasms, so peculiar in this disease. In obstinate constipation of the bowels from hard fœces, the infusion of this medicine has been administered often with immediate relief, by occasioning a speedy expulsion of the obstructed indurated fœces. In epilepsy and general convulsions, it has performed surprising cures.

Toothach Tree. *Xanthoxylum Clava Herculis*. The bark and roots.

Also called prickly yellow wood. It flourishes in the southern

states, particularly in Georgia, the Floridas, &c. and other tropical climates. It grows from ten to sixteen feet in height, and resembles the prickly ash tree, only much larger. The bark is full of knobs, surmounted by sharp thorns.

The bark is a powerful stimulant and sialagogue, carminative, and detergent. It has a hot acrid taste, and when chewed in small quantity powerfully promotes the flow of saliva. It is used in this way to relieve the toothach. A decoction of the bark is used with great success as an internal remedy, and also as a wash for foul ulcers, and sore throats, which it powerfully cleanses and disposes to healthy granulations. In the venereal sore throat, this is particularly efficient. The powdered bark is mixed with dressings, in external ulcers.

The decoction of the bark, taken freely, and the pained parts bathed with the same, is one of the most sure remedies for the chronic rheumatism yet discovered. It may be given alone or in combination with sarsaparilla, or other alteratives. Exhibited in the same form, it is perhaps equal, if not superior, to any other article yet discovered, in eradicating syphilis, and relieving the rheumatic pains consequent upon the use of mercury. As a general remedy, it may be employed with decided benefit in all the forms of the venereal disease, and especially where mercury has been previously administered. The fresh juice expressed from the roots, affords certain relief in the disease termed, *dry bellyach*. This important fact was discovered in the West Indies, by watching a female slave, who collected the root in the woods and gave two spoonsful of its juice to a negro suffering under that colic, at an interval of two hours. Such a dose occasioned a profound, but composed sleep of twelve hours; when all sense of pain and other distressing symptoms had vanished: the cure was completed by giving an infusion of such expressed roots in water, by way of diet drink. Dr. Henry of Jamaica, has given his experience of the success of xanthoxylum in curing epilepsy, ulcers, fevers, dry bellyach, &c. He says the juice of the wood, when preserved in rum, and administered in doses not exceeding a wine glassful, has effectually removed the most obstinate epileptic fits.

For internal use, boil two ounces of the bark, with two ounces of sarsaparilla, in four quarts of water down to two; strain it, and give the patient a pint twice a day. This bark possesses such power that but a small quantity is necessay to form a saturated infusion, tincture, or decoction.

Tory Weed, or Canadian Burr.

The herb known by this name in many parts of the country, grows from one to two feet high; top branched; leaves resembling mullen leaves, but smaller; flowers of a red or pink color, and seed contained in a burr, which fastens upon clothes, or upon the hair of animals, and adheres with great pertinacity. It is found in the richest soil, and spreads with great rapidity, much to the annoyance of the farmer.

This troublesome weed may be rendered useful for many purposes of medicine. The leaves are an excellent application for allaying

inflammations and extracting the soreness and virulence from irritated, bruised, or galled parts. When the feet are excoriated by the shoes, or in travelling, I know of no application which will give such complete and immediate relief as the leaves of tory weed. According to Dr. Morrison, of Utica, the pulverized root of this plant taken in doses of two or three grains, four or five times a day, will prevent the hydrophobia. A small dose vomits.

Turmeric. *Circuma Longa.* The root.

Turmeric is a perrennial plant, growing plentifully in West Florida, and on the borders of the Ohio river. The leaves of turmeric are six inches long, and three or four inches broad, of a bright green color, and pointed at the end; the flowers grow on stalks ten inches high, and about the thickness of the little finger, which are of a pale reddish color, collected in a cone of an oblong figure. The roots are tuberous, knotty, long, and wrinkled; externally of a pale yellow color, internally of a shining saffron brown. They have a weak aromatic smell, and a slightly bitter aromatic taste.

Turmeric root has been celebrated in the cure of diseases of the liver, jaundice, cachexy, dropsy, intermittent fevers, &c. In the present practice it is also used in removing obstructions of the menses, and is effectual in giving speedy relief in fits of the gravel and in resolving tumors.

A tea spoonful of the powdered root may be taken at a dose, or it may be made into a tea.

Unicorn Root. *Aletris Farinosa.* The root.

Also called mealy starwort, star grass, blazing star, bitter grass, ague root, star root, devil's bit, &c.

The root is perrennial, small, black outside, brown inside, and crooked. Radical leaves from six to twelve, spreading on the ground like a star; but all unequal in size, sessile, lance-like, entire, very smooth, with many longitudinal veins, very sharp at the end; they are pale green, and bleach in winter, or by drying; the longest are four inches. Stalk from one to two feet high, very simple, upright, nearly naked, with remote scales, whitish, and sometimes changing into leaves. Flowers white, forming a long slender scattered spike. This species is found from New England to Georgia and Kentucky, generally in dry poor soils.

The root is intensely bitter, and not cathartic like aloes. It is tonic, stomachic, and repellant. It is employed by many botanic physicians, and is highly valued by them as well as the Indians. But small doses only must be used, because large ones produce nausea, dizziness, and narcotic effects; twelve grains of the powdered root is the largest dose. In repeated small doses it invigorates the appetite.—The infusion or decoction is preferable. It cures the flatulent and hysteric colic, and is said to relieve the chronic rheumatism, either in powder, tincture, or cordial. In fevers it avails speedily. It affords an excellent female bitter. A mild cordial is the best spiritous preparation.

Valerian. *Valeriana Sylvestris.*

Grows two or three feet high; leaves large and hairy, in pairs, and of a dusky green color, divided down to the middle rib, and appear as if made of many small leaves affixed on the two sides of the stalk; flowers in large tufts or bunches on the top of the branches, and are of a pale reddish color. The root consists of a number of slender fibres matted together and attached to one body, are of a brown white color, having a strong unpleasant smell. It is perrennial, and varies in its appearance and sensible qualities, according to the situation in which it grows. In marshes and shady places, its leaves are broader than that which grows on high lands; and the root of that found on high dry land is much stronger than that which grows in marshes, and is perferable for medical use.

Valerian is an excellent medicine in nervous disorders, and particularly in epilepsies, hysterical and hypochondriac affections, proceeding from debility of the nervous system.

The common dose in nervous complaints, is from one to two tea spoonsful of the powdered root, taken in a tea cupful of mint water, twice or three times a day. The same dose may be steeped in water and taken. The American valerian is sometimes known by the name of white snake root.

Vervain. *Verbena Hastata.*

The common blue vervain is a tall showy plant, common by road sides in low ground. Stem three or four feet high; leaves opposite, rough, sharply serrate, tapering to a long point, the lower ones broader, with commonly a lobe on each side at their base; spikes numerous, erect, slender, the flowering commencing at their base, and is long in reaching their summit; flowers close, of a dark purplish hue, appearing in July and August, roots long and small. It is found throughout the United States.

It has been found beneficial in the cure of intermittents and scrofula, opens obstructions of the viscera, promotes the menses, and is good in gravelly complaints, coughs and wheezing, and expels worms. It should be prepared in a strong decoction, and drank daily.

The Vine.

The dried fruit, called raisins, and the fomented juice of the fruit, called Spanish white wine.

The vine grows in temperate situations in many parts of the world, and is cultivated very generally for the sake of its agreeable subacid fruit. When thoroughly ripe, the grape is one of the most agreeable fruits. It is cooling, antiseptic, and nutritious; and when eaten in considerable quantity, diuretic and gently laxative. In inflammatory diseases, and all others where acids are indicated, they form an excellent article of diet.

Raisins are grapes that have been carefully dried. By this means, not only the water they contain is dissipated, but the quantity of acid

seems to be diminished. They become more saccharine, mucilaginous, and laxative, than the recent grape, but are less cooling.

Wine is the juice of the grape altered by fermentation. The wines most commonly drunk in this country, are port, which is red and austere, and claret, which is thinner and higher flavored. Our white wines are called Madeira, Sherry, Lisbon, Malaga, and Hock. Of these the last is the most acidulous, and Malaga the sweetest.

Wine, taken in moderate quantities, acts as a beneficial stimulus to the whole system. It promotes digestion, increases the action of the heart and arteries, raises the heat of the body, and exhilirates the spirits. Taken to excess, it produces inebriety and stupor, which are often succeeded by headach, nausea, and diarrhœa, which last for several days. Habitual excess in wine debilitates the stomach, produces inflammation of the liver, weakens the nervous system, and gives rise to gout, apoplexy, tremors, and cutaneous affections.

To convalescents, and in all diseases of general debility, and deficiency of the vital powers; wine is a remedy on which we may place great dependance; and when properly administered, its effects are often scarcely credible.

In typhus fever, attended by low delirium arising from debility, and also in the scarlet fever, wine administered to the extent of one bottle or more in twenty-four hours, surprisingly mitigates the symptoms, sustains the vital heat and energy, and finally proves a sovereign remedy. Wine, given to the extent of three gallons in four days, has cured the lockjaw. Probably spiritous liquors of any kind would have the same effect when taken in quantity sufficient to produce intoxication.

Wine has been emphatically termed the "milk of the aged," but parents are seriously advised to beware of giving wine to their children *indiscriminately*; because to them it can be of no service only when taken as a medicine; and those injudicious persons who encourage young people to take wine habitually at their meals, are guilty of an abuse which cannot be easily repaired by future abstinence.

Wine is often adulterated with lead or other deleterious drugs. In order to detect this fraud, take two drachms of cream tartar, and one drachm of liver of sulphur; put them into a two ounce vial of soft water. The vial must be kept well corked, and occasionally shaken for about ten minutes: when the powder has subsided, decant the clear liquor, and preserve it in a well stopped bottle. From fifteen to twenty drops of this liquid are to be dropped into a glass filled with the suspected wine; and if the wine turns blackish or muddy, and deposits a dark colored sediment, we may be certain it is impregnated with sugar of lead, or some other preparation of that metal equally destructive.

Water Dock. *Rumex Aquaticus.* The root and leaves

This plant grows in peat marshes, wet ditches, pools, at the sides of rivers, and in shallow water. It rises five feet high; leaves nearly two feet long, narrow, linear, and pointed; those at the bottom are near eighteen inches in length, of a narrow ovate form, somewhat

indented, and stand upon long channelled foot-stalks; flowers numerous, yellow, and hang in whorled spikes upon slender pedunclcs.

This plant affords a medicine of considerable efficacy, when applied externally as a wash for foul ulcers, and for spongy and putrid gums; its roots when pulverized have been found excellent for cleaning the teeth. These roots are of a bitter, astringent taste, and have often been employed for the cure of scorbutic and cutaneous disorders, in which they are administered internally, and applied externally in ointments, cataplasms, lotions or fomentations. Decoctions of the leaves are, likewise, an efficacious laxative, and have been taken with advantage in rheumatic pains and chronic diseases occasioned by costiveness, or by visceral obstructions. The dose usually given is a decoction of half an ounce of the fresh roots, or from one to two drachms of them in a dry state.

The Indians used the water dock with great success in cleansing foul ulcers. Dr. Withering says he saw an ill-conditioned ulcer in the mouth, which had destroyed the palate, cured by washing the mouth with a decoction of this root, and drinking a small quantity of the same decoction daily.

WHITE WOOD TREE. *Liriodendron Tulipifera.* The inner bark of the root.

This noble tree is so well known throughout the United States, by the names of tulip tree, white poplar, white wood, &c. that it is needless to give any description of it.

The inner bark of the root of this tree must be cut fine and ground to powder. It is a great tonic, a pleasant aromatic bitter, and an astringent; it is therefore a good substitute for the Peruvian bark in the cure of intermittents, and may be employed in all cases where tonics and aromatics are indicated. It may be infused in spirits for a bitter, or one or two tea spoonsful of the powder may be taken three or four times a day.

Combined with poplar bark, it is very successful in jaundice, rheumatism, &c.

WHITE BALL. *Cephalanthus Occidentalis.* The flowers, leaves and bark.

Also called buttonwood shrub, little snowball, swampwood, pond dogwood, globe flower.

This is a fine ornamental shrub from five to fifteen feet high, very branched, bark yellow brown, spotted with red, rough on stems; leaves ternate or opposite, with red petioles, from two to four inches long, oval, and sharp, undulate, smooth on both sides, nerves often red, veins yellow. Flowers terminal, peduncled, forming round balls of a cream white color, and sweet scented, fringed all over, nearly as large as a walnut. Found mostly near streams, ponds and swamps all over the United States.

Its properties are tonic, febrifuge, cathartic, diaphoretic, &c.

The flowers, leaves, bark of stems and roots, are used by the southern Indians and French settlers in Louisiana. A fine fragrant syrup may be made with the flowers and leaves, which is a mild laxative and tonic. The most efficient part is the bark of the root. A decoction of it cures intermittent fevers, acting on the bowels at the same time, and is useful in relaxed bowels, &c.

WINTER GREEN. *Gautiera Repens.* The leaves and essential oil.

Also called mountain tea, deer berry, spice berry, tea berry, ground berry, ground ivy, hill berry, &c.

Its root is horizontal, creeping, slender, yellowish, with few fibres; stems several, upright, few inches high, slender; leaves terminal, unequal, few from three to five, scattered; flowers few, white or flesh colored, terminal, on drooping stems, fruit has the appearance of a round scarlet perforated berry, of the size of a pea. Found on hills and mountains, in shady woods, through the United States. The whole plant has a peculiar smell and taste, aromatic and sweet.

Winter green is stimulant, anodyne, astringent, emmenagogue, antispasmodic, diaphoretic, milky and cordial; and a popular remedy in many parts of the country. It is generally used as a tea, but the essence and oil possess eminently all the properties, and are kept in the shops. The tea is used as a palliative in asthma, to restore strength, promote menstruation, also in cases of debility, in the secondary stage of diarrhœa, and to promote the secretion of milk in the breast; it is a very agreeable and refreshing beverage. The oil relieves the toothach, or allays the pain of carious teeth. The Indians make great use of this plant as a stimulant, restorative, cordial, &c. It is injurious in fever. The oil is used as a disguise to many of the popular panaceas.

WITCH HAZLE. *Hamamelis Virginiana.* The bark and leaves.

A shrub from six to ten feet high, with irregular, crooked and knotty branches; bark smooth, grey, with brown dots; leaves large, smooth, alternate, petiolate, end obtuse, nerves prominent. Flowers on short stems, clustered three to five together, in several places along the branches, yellow; fruit similar to a hazlenut. It is common on hills and mountains, and on the stony banks of streams, throughout the United States.

It is a sedative, antiseptic, astringent, tonic, discutient, &c. The Indians value this shrub highly, and it is much used by botanic physicians. The bark affords an excellent topical application for painful tumors and piles, external inflammations, sore and inflamed eyes; and also a wash for foul sores, corroded surfaces, sore mouth, &c. in cataplasm, poultice or wash. A tea is made of the leaves, and employed for many purposes, in bowel complaints, pains in the sides, menstrual effusions, bleeding at the stomach, &c. In the last case, the chewed leaves, decoction of the bark, or tea of the leaves, are all employed with great advantage. A strong infusion is given in in-

jection for bow- complaints. It is a mild and efficient astringent and antisept- in all cases.

WORMWOOD. *Artemisia Absinthium*. The leaves and flowering heads.

The common wormwood is a perrennial herb, growing wild on the road sides, and is cultivated in gardens; the smell of the leaves is disagreeable, and their taste intensely bitter. It is used in stomach complaints, and is of great service to hypochondriacs. It is also employed in intermittent fevers, in cachectic and dropsical affections, in jaundice and against worms. An infusion of the leaves is a good stomachic, and with the addition of fixed alkaline salts proves a powerful diuretic in some dropsical cases.

The essential oil is used both externally and internally, for destroying worms. The herb being an excellent antiseptic, is often employed in fomentations to resist putrefaction; and if the plant be macerated in boiling water, and repeatedly applied to a bruise, by way of cataplasm, it will not only speedily remove the pain, but also prevent the swelling and discoloration of the part.

YARROW. *Millefolium*. The herb.

Common yarrow is a frequent inhabitant of dry pastures and fields; stem erect, furrowed, hairy, branched at top; leaves alternate, cut into a multitude of very small linear subdivisions; flowers white, forming a large, flat topped, crowded corymb. The plant has a strong penetrating smell.

Yarrow possesses considerable medicinal virtue, as a detergent, purifies the blood, opens pores, removes obstructions, &c. It is said that a table spoonful of the juice of this plant taken twice a day, and the bruised herb applied over the cancer, after washing it with the juice, has cured a cancer of the breast. It stops spitting of blood, and cures the bleeding piles and dysentery. It may be used in decoction, sweetened with honey, and taken freely. By applying the pounded green leaves over a bruise and drinking the infusion, it dissipates it in a few days.

COLLECTION AND PRESERVATION OF

SIMPLES.

Each of the kingdoms of Nature furnishes articles which are employed in medicine, either in their natural state or after they have been prepared by the art of pharmacy.

In collecting these, attention must be paid to select such as are most sound and perfect, to separate from them whatever is injured or decayed, and to free them from all foreign matters adhering to them.

Those precautions must be taken which are best fitted for preserving them. They must in general be defended from the effects of moisture, too great heat, or cold, and confined air.

When their activity depends on their volatile principles, they must be preserved from the contact of the air as much as possible.

As the vegetable kingdom presents us with the greatest number of simples, and the substances belonging to it are the least constant in their properties, and most subject to decay, it becomes necessary to give a few general rules for their collection and preservation.

Vegetable medicines should be collected in the countries where they are indigenous; and those which grow wild in dry soils, and high situations, fully exposed to the air and sun, are in general to be preferred to those which grow in moist, low, shady, or confined places.

Roots which are annual, should be collected before they shoot out their stalks or flowers; biennial roots, in the harvest of the first, or spring of the second year; perrennial, either in the spring before the sap has begun to mount, or in harvest, after it has returned.

Those which are worm eaten or decayed are to be rejected. The others are immediately to be cleansed with a brush and cold water, letting them lie in it as short a time as possible; and the fibres and little roots, when not essential are to be cut away.

Roots which consist principally of fibres and have but a small top, may be immediately dried. If they be juicy, and not aromatic, this may be done by a heat not exceeding 100° of Fahrenheit; but if aromatic, by simply exposing them, and frequently turning them in a current of cold dry air: if very thick and strong, they are to be split or cut into slices, and strung upon threads; if covered with a tough bark, they may be pealed fresh and then dried. Such as lose their virtues by drying, or are directed to be preserved in a fresh state, are to be kept buried in dry sand.

No very general rule can be given for the collection of herbs and

leaves, some of them acquiring activity from age, and others, as the mucilaginous leaves, from the same cause losing the property for which they are officinal. Aromatics are to be collected after the flower buds are formed; annuals, not aromatic, when they are about to flower, or when in flower; biennials, before they shoot, and perrennials before they flower especially if their fibres become woody.

They are to be gathered in dry weather, after the dew is off them, or in the evening before it falls, and are to be freed from decayed, wihtered, or foreign leaves. They are usually tied in bundles, and hung up in a shady, warm and airy place; or spread upon the floor and frequently turned. If very juicy, they are laid upon a seive, and dried by a gentle degree of artificial warmth.

Sprouts are collected before the buds are open; and stalks are gathered in Autumn.

Barks and woods are collected when the most active part of the vegetables are concentrated in them, which happens in the spring and Autumn. Spring is preferred for resinous barks; and Autumn for others, which are not resinous but rather gummy. Barks should be taken from young trees, and freed from decayed parts and all impurities.

The same rules direct the collection of woods; but they must be taken from very young trees. Among the resinous woods, the heaviest, which sink in water, are selected. The rough bark is to be rejected.

Flowers are collected in clear, dry weather, before noon, but after the dew is off; either when they are about to open or immediately after they have opened. Of some, the petals, or colored flower leaves, only are preserved, and the colorless claws rejected; of others whose calyx, or outer covering, is odorous, the whole flower is kept. Flowers which are too small to be plucked singly, are dried with part of the stalk. These are called heads, or tops.

Flowers are to be dried nearly as leaves, but more quickly, and with more attention. As they must not be exposed to the sun, it is best done by a slight degree of artificial warmth.

Seeds and ripe fruits, unless when otherwise directed, are to be gathered when ripe, but before they fall spontaneously. Some bulky fruits are freed from their core and seeds, strung upon threads, and dried artificially. They are in general best preserved in their natural coverings, although some, as the colocynth, are peeled; and others, as the tamarind, preserved fresh. Many of these are apt to spoil, or become rancid; and as they are then not fit for medical use, no very large quantity of them should be collected at a time.

The proper drying of vegetable substances is of the greatest importance. It is often directed to be done in the shade, and slowly, that the volatile and active particles may not be dissipated by too great a heat; but this is an error, for they always lose more by a slow, than by a quick drying. When, on account of the color, they cannot be exposed to the sun, and the warmth of the atmosphere is insufficient, they should be dried by an artificial heat, not exceeding 100° Fahrenheit, and well exposed to a current of air. When perfectly dry and friable, they have little smell; but after keeping for

some time, they attract moisture from the air, and regain their proper odor.

The boxes and drawers in which vegetable matters are kept, should not impart to them any smell or taste; and more certainly to avoid this, they should be lined with paper. Such as are volatile, or of delicate texture, or are subject to suffer from insects, must be kept in well covered glasses. Fruits and oily seeds, which are apt to become rancid, must be kept in cool and dry, but by no means a warm or moist air.

Oily seeds, odorous plants, and those containing volatile principles, must be collected fresh every year. Others, whose properties are more permanent, and not subject to decay, will keep for several years.

Vegetables collected in a moist and rainy season, are in general more watery, and apt to spoil. In a dry season on the contrary, they contain more oily and resinous particles, and keep much better.

METALLIC, MINERAL, ANIMAL, &c.

MEDICINAL SUBSTANCES, IN COMMON USE.

Antimony.

The pure metal obtained from the ore, is of a silvery, white color, and plated texture, moderately hard, and very brittle; easily fusible, and volatilized by a heat not very intense; oxydized by exposure to the air, at a temperature moderately increased; and when oxydized, capable of combining with most of the acids.

The antimonial metal is a medicine of great power; a quantity too minute to be sensible in the most delicate balance, is capable of producing violent effects, if taken in solution. Some of its preparations, however, are given internally, being rendered milder in their operation. They are principally employed in cutaneous affections, and in fevers, to produce purging, vomiting, and diaphoresis.

The following are the principal preparations of this metal now in use:

Antimonial powder—Oxide of antimony with phosphate of lime. This substance (*James' powder*) has been long celebrated as a remedy in febrile affections. It acts as a very general evacuant, occasioning sweat, purging, and frequently vomiting. Its dose is from five to six grains, repeated every six hours until its effects are obtained. It is better adapted to fevers of an inflammatory nature, than to those of the typhoid kind.

Emetic Tartar—Tartrite of antimony. Of all the preparations of antimony, this is the most certain in its operation. In doses of one to eight grains, it operates as an emetic, and sometimes as a cathartic. In smaller doses it excites nausea, and proves a powerful diaphoretic and expectorant. As an emetic, it is chiefly given in the beginning of fevers, and whenever it is wished to evacuate the contents of the stomach quickly. In great debility, its use is improper, and frequently fatal: in all cases its operation is severe and straining. As a diaphoretic, it is given in small doses, of from an eighth to a quarter of a grain. The only proper form of administering it is in solution, and in divided doses, at short intervals, if we wish to excite vomiting.

Alum.

Alum, from its astringent power, is employed to check hemorrhages, and serous evacuations. It has been used, though less frequent-

ly, in intermittent fever, malignant small pox, and painters' colic.—Its dose is from five to fifteen grains. The addition of an aromatic is generally necessary, however, to prevent nausea, when it is given in a solid form. The best form of administering it, is that of alum whey, prepared by adding two drachms of the powdered alum to a pint of hot milk. The dose of this is three or four ounces. In uterine hemorrhage, and diabetes, this whey taken to the quantity of three or four ounces, three times a day, has produced very favorable effects.

It is also used externally in astringent and repellant lotions, and eyewaters. Burnt alum, taken internally, has been highly extolled in cases of colic: when taken to the extent of a scruple at a dose, it is said to gently move the bowels, and give very great relief from the severe pain. Burnt alum is applied as an escharotic to fungous flesh.

Alcohol. *Spirit of Wine.*

This is the active exhiliarating ingredient in all vinous, fermented or distilled liquors. It is the proportion of alcohol that renders wines more or less sour, and prevents their becoming acid. Ardent spirits, such as brandy, rum, and whiskey, consist almost entirely of three ingredients, viz. water, *alcohol*, to which they owe their strength, and a small quantity of peculiar oil, upon which their flavor depends. From vinous liquors alcohol is obtained by distillation; and it is by the repetition of this process, with a small portion of potash, that *pure alcohol* is obtained. It is colorless, and its specific gravity to that of water, as 835 to 1000.

On the living body, alcohol acts as a most violent stimulus. It coagulates the fluids, and corrugates the solids. Applied externally, it strengthens the vessels, and may thus restrain passive hemorrhages. It constantly contracts the extremities of the nerves it touches, and deprives them of sense and motion. This liquor received undiluted into the stomach, produces the same effects, contracting all the solid parts with which it comes in contact, and destroying, at least for a time, their use and office. In a moderate dose it produces a high state of excitement, both of body and mind, which is followed by proportional languor: if the quantity be considerable, a palsy or apoplexy follows, which frequently ends in death. Alcohol is scarcely employed in its pure state as a medicine, but extensively under the form of vinous and spiritous liquors, which afford our most powerful stimulants. Wines seem more permanent in their stimulant operations than ardent spirits; hence they are superior in tonic power, though inferior in producing a sudden stimulus.

From the long continued use of alcohol many diseases derive their origin, as dyspepsia, hypochondriasis, and visceral obstructions, occasioning dropsy. These may be ascribed to the exertion of its stimulant power, by which the irritability of the stomach and other viscera is worn out, and indirect debility produced. Alcohol is used externally as a stimulant in muscular pains, and also as an application to recent burns. In pharmacy, it is employed as a solvent of the active matter of many vegetable and some animal productions. Diluted with an equal weight of water, it forms proof spirit.

Ardent spirits, like wine, in small quantities, prove a powerful cordial, and for the time, a strengthening beverage. They increase the circulation, raise the pulse, give vigor to the stomach, promote digestion, and prevent flatulence. Thus they are of great service in counteracting the influence of a moist and cold atmosphere, and of noxious exhalations, and consequently are fitted for those employed in occupations of an unwholesome nature. To the weakly and relaxed, they are highly useful, by giving an elasticity and firmness of tone. But in a rigid habit, they are equally pernicious, by producing a dryness of fibre, and prematurely hastening the approach of age. The abuse of ardent spirits is also productive of much more fatal effects than an immmoderate use of wine. Wine may be said for the most part to sap the constitution by degrees; spirits, on the contrary, attack it by storm, and at once prey on the spirit of existence.

Sal Ammoniac. *Muriate of Ammonia.*

Sal ammoniac is found native, especially in the neighborhood of volcanoes. It was first prepared in Egypt from the soot of camel's dung, by sublimation. But the greatest part of that now used, is manufactured in Europe, either by combining directly ammonia with muriatic acid, or by decomposing the sulphate of ammonia by means of muriate of soda, or the muriates of lime and magnesia by means of ammonia. It is prepared in solid masses, semi-transparent, and somewhat ductile. It is volatile in a small degree of heat; its alkali is extricated in pungent vapors on the admixture of quick lime; its acid is extricated in white fumes, on pouring concentrated sulphuric acid upon it. It dissolves in rather less than three times its weight of water.

Sal ammoniac, when pure, promotes perspiration, and in some cases, increases the secretion of urine. A drachm of it dissolved in water, if the patient be kept warm after taking it, generally proves sudorific; given in a large dose, it proves aperient; and in a still larger, it acts as an emetic. As a cooling and diaphoretic medicine, it may be dissolved in vinegar or water, and taken in fevers, &c.

This salt has also been employed externally in lotions and embrocations, for schirrus and other indolent tumors; for removing warts and other excrescences; for inflammations; and in gargarisms for quinsy. Externally applied, sal ammoniac is a valuable remedy. It may act in two ways: 1. By the cold produced during its solution. It is from this cause that fomentations of sal ammoniac prove beneficial in mania, apoplexy from plethora, injuries of the head, and violent headachs. When used with this intention the solution should be applied as soon as it is made. 2. By the stimulus of the salt. On this principle we may explain its action as a discutient in indolent tumors of all kinds, contusion, gangrene, itch, opthalmia, quinsy, and in stimulating clysters. In some cases, as in chilblains and other indolent inflammations, both modes of action may be serviceable.—When first applied, the coldness of the solution will diminish the sense of heat, and uneasiness of the part, and the subsequent stimulus will excite a more healthy action in the vessels.

Carbonate of Ammonia.—This is the prepared ammonia; it has the taste and smell of ammonia, but weaker, and is efflorescent when exposed to the air.

The volatile alkali and spirit obtained from sal ammoniac, are the purest of all the medicines of this kind. They are somewhat more acrimonious than those produced directly from animal substances which always contain a portion of the oil of the subject, and receive from thence some degree of a soapy quality.

The volatile salt and spirit prepared from hartshorn and animal bones, are now entirely susperseded by those obtained from the sal ammoniac.

Volatile alkaline salts, and their solutions called spirits, by their stimulating smell, prove serviceable in languors and faintings. Taken internally, they stimulate, greatly promote perspiration, and act particularly on the nervous system. They prove useful in lethargic cases; in hysterical and hypochondriacal disorders, and in the languors, headachs, flatulent colics, and other symptoms which attend them. In some fevers, particularly those of a low kind, in aged persons, and those of phlegmatic habits, and accompanied with a cough, hoarseness, &c. they are of great utility, raising the vital principle, and exciting a salutary diaphoresis. The dose of the salt is from five to fifteen grains, and of the spirit thirty or forty drops in cold water.

The spirit of sal ammmoniac has been employed with complete success in the cure of the bites of venomous snakes. The dose in this case should be, forty drops of the caustic volatile alkali immediately after the accident; and repeated every five minutes; while the parts affected are continually washed with the same preparation.

Oxyd of Arsenic.

Arsenic is a heavy, opake, crystalline substance, of a very singular nature, contained in the ore of other minerals. It is more particularly found in the cobalt, from which most of the arsenic brought to us is extracted in Saxony, by a kind of sublimation. It is very volatile, and easily oxydated. By oxydation it is converted into a white powder, which has been considered as an oxyd.

Oxyd of arsenic is one of the most sudden and violent poisons we are acquainted with. In mines, it causes the destruction of numbers who explore them; and is frequently the instrument by which victims are sacrificed. The fumes of arsenic are so deleterious to the lungs, that the artist ought to be on his guard to prevent inhalation by the mouth; for if they be mixed and swallowed with the saliva, effects will take place similar to those which follow its introduction into the stomach in its saline state.

Though the most deadly of mineral poisons, arsenic has been employed as medicine, internally, by many physicians, in intermittent fevers, periodical headachs, &c. That it should have its effect to quell these fits or disorders, need not surprise us; for we may well suppose that from its great power it would overcome and swallow up every other disease, and substitute itself, a greater disease. Many

eminent physicians have condemned the medicinal use of arsenic, as ruinous to the constitution. We have the testimony of Dr. Black, a professor in the university of Edinburgh, that he has seen the internal exhibition of arsenic attended with fatal effects, such as hectics, &c.; and he also declares that the external application of this substance has often produced dreadful consequences; so that, far from recommending it internally, he reprobates even the external use of this precarious drug.

As an external remedy, arsenic has long been known as the basis of most of the celebrated *cancer powders* and *plasters*; and it has frequently been resorted to in various forms with the view of correcting the intolerable fœtor attending cancerous and other foul ulcers, with success. Arsenic has even been employed in substance, sprinkled upon the ulcer; but this method of using it is excessively painful, and extremely dangerous. There have been fatal effects produced from its absorption.

Borax. *Sub Borate of Soda.*

The salt, consisting of boracic acid, united with soda, is brought from Thibet, where it is found in its native state. It is purified in Europe by crystallization; its taste is cool; it is soluble in eighteen parts of cold and six of hot water.

The medicinal virtues of borax have not been sufficiently ascertained by experience: in doses of half a drachm or two scruples, it is supposed to be diuretic, emmenagogue, and a promoter of delivery. A solution of borax in water is one of the best applications for healing cankerous crusts, or the thrush in the mouths and fauces of children; or it may be applied for the same purpose in the form of powder mixed with sugar. It is one of the most useful applications to sore nipples, or chapped lips and hands in winter; for these purposes a few grains of borax may be dissolved in warm water, with the addition of a little pure honey.

Blue Vitriol. *Sulphate of Copper.*

This article is made by stratifying plates of copper with the sulphur; and on slow combustion the sulphuric acid corrodes the copper; the metal is then boiled in water, till the saline particles be dissolved; when after repeated solution and subsequent evaporation, the whole is reduced to the crystalline point.

The sulphate of copper has a strong styptic, metallic taste, and is chiefly used externally as an escharotic for destroying warts, callous edges, and fungous excrescences, as a stimulant application to ill-conditioned ulcers, and as a styptic to bleeding surfaces. Taken internally, it operates, in very small doses as a very powerful emetic. It has, however, been exhibited in incipient consumption, intermittent fever and epilepsy; but its use is not free from danger.

Cantharides. Spanish Flies.

The cantharides is an insect collected from the leaves of plants in Spain and Italy, and dried in the sun. It is of a lively green color, has a faint unpleasant smell, and a taste slightly acrid. The active matter of this insect inflames and excoriates the skin, and is used as the basis of the common blistering plasters. Taken internally they often occasion a discharge of blood by urine, with exquisite pain: if the dose be considerable they seem to inflame and exulcerate the whole intestinal canal; the stools become mucous and purulent; the breath fœtid and cadaverous; intense pains are felt in the lower belly; the patient faints, grows giddy and dies. Applied to the skin they first inflame and afterwards excoriate the part, raising a more perfect blister than any of the vegetable acrids, occasioning a more plentiful discharge of serum. But even the external application of cantharides is often followed by a stranguary, accompanied with thirst and feverish heat. The inconveniencies arising from the use of cantharides, whether taken internally or applied externally, are best obviated by drinking plentifully of bland emmollient liquids, such as milk, decoctions of barley, linseed, solutions of gum arabic, &c. or by pouring warm water from a bottle upon the lower part of the belly as the person lies in bed. Internally administered, it acts with much violence on the urinary passages. In dropsy, it has been given as a diuretic, in doses of one grain once or twice a day, or a few drops of the tincture continued for some time; it has been prescribed in a similar manner in obstinate gleet and fluor albus, and in retention of urine arising from debility of body, of the bladder; or in the opposite affection of the diabetes, incontinence of urine from debility of the constrictor.

Applied externally, cantharides are one of our best and most powerful remedies. By proper management they may be regulated so as to act as a gentle stimulus, as a rubefacient, or as a blister. Blisters may be employed with advantage in almost all diseases accompanied with typhus fever, especially if any important viscus, as the brain, lungs, or liver be at the same time particularly affected. In these cases the blisters are not applied to the diseased organs themselves, but as near them as may be convenient. When we wish to excite action in an organ, the blisters are, if possible, applied directly to the diseased organ.

After a blister has been raised, it is often of advantage to convert the serous into a purulent discharge, by exciting suppuration, which is done by applying to the blistering part any acrid stimulating ointment, one, for example containing a small proportion of cantharides, which answers the purpose by the irritation it keeps up.

Castor. *The Beaver.* The substance collected in the follicles near the anus, called castor.

The beaver is an amphibious animal, which inhabits the northern parts of Europe, Asia, and America; in the banks of rivers, or lakes,

and at a distance from the habitations of men. Near the rectum of both sexes, there are two little bags, about the size of a hen's egg, containing a brownish oily matter, called *castor*, which is a peculiar deposition of fat, interwoven with cellular membrane. This substance has a disagreeable narcotic smell, and a bitterish, acrid, nauseous taste. By drying it in the smoke of a chimney, it may be preserved seven or eight years. The best castor is brought from Russia, Prussia, and Poland; that procured in Canada and New-England, is of an inferior quality. That which is very old, quite black, and destitute of smell and taste is unfit for medicinal use.

To preserve this drug from injury, it should be kept wrapt up in bladders or oiled paper. Its active matter is dissolved by alcohol, proof spirit, and partially by water. The tincture made by the diluted alcohol is the least nauseous. Castor is an excellent antispasmodic, and acts particularly on the uterine system. It is given with advantage in most spasmodic diseases, particularly in hysteria and epilepsy. In powder, which is the most eligible form, it is exhibited in doses of from ten to twenty grains, or from one to two drachms of the tincture.

Charcoal of Wood. *Carbo Ligni.*

Common charcoal of wood, or carbon, is a sort of artifical coal, consisting of half burnt wood. It is in the form of solid masses of a black color, is brittle, and has neither smell nor taste. It consists of 63, 86 of carbon, and 36, 14 of oxygen.

Charcoal possesses a number of singular properties, which render it of considerable importance in many respects. It is incapable of putrifying or rotting like wood; and so remarkable is the durability of this substance, that it may be preserved to an indefinite length of time. Besides the great advantage which this article affords to the the artist and manufacturer, it has of late been employed with considerable success;—first, in correcting the burnt or smoky taste in ardent spirits:—secondly, in depriving rancid oil of its disagreeable flavor:—and thirdly, in restoring putrid meat. For these useful purposes it should be previously reduced to powder, and that only used which is fresh prepared, or has been kept in close vessels, that it shall have absorbed no fixed air from the common atmosphere. The tainted flavor of ardent spirits, may be entirely destroyed, by merely shaking it with powdered charcoal.

Charcoal is of still greater utility for purifying water on shipboard. The most offensive water may be rendered perfectly sweet, by merely filtrating it through maple, hickory, or oak coal and sand. On account of its absorbent and antiseptic properties, this substance promises to be of considerable service in medicine. It has been found to arrest the progress of mortification, when applied in the form of medicated poultice, or united with yeast, to the affected part. In a variety of instances, it has been found to have a remarkable effect in removing habitual costiveness, without inducing an extraordinary degree of weakness, especially if mixed with syrup of roses. Many persons afflicted with that disagreeable complaint, a fœtid breath from a

costive habit, have obtained effectual relief by taking two or three times a day a table spoonful of each of the above articles. Charcoal made from maple wood, or burnt bread, finely powdered, makes a simple, efficacious and safe tooth powder, which is preferable to any other. It neutralizes and entirely destroys for a time, any fœtor which may arise from a carious tooth. It has lately been found to assist greatly in the cure of scald head, by being sprinkled over the ulcer in fine powder.

The most eligible process for preparing charcoal for medicinal uses, free from all impurities and disagreeable taste, is to inclose small billets of wood in an iron cylinder, having a tube fixed to one end, and distil them until no more smoke and water escape from the tube. Then put out the fire, and close the mouth with clay, until the cylinder cools. The barrels of old guns, or pistols, may serve for this purpose; or the pieces of wood may be put into a pot not closely covered, and surrounded with live coals until all smoke from the pot shall cease. Then remove the coals, and closely lute the cover with clay, until the pot cools. Or, pulverize some well burnt common charcoal, and then heat it in a covered crucible to a glowing red, till it cease to give out any inflammable vapor. It should be immediately secured in well stopped glass bottles, and in that way it may be preserved unimpaired for any length of time.

Carbonate.

Is a generic name for the combinations of the carbonic acid with earths, alkalies, and metallic oxyds.

The most general character of the carbonates in their effervescing violently when any of the stronger acids are poured upon them.—This phenomena is owing to these acids displacing by their greater affinity the carbonic acid, which flies off in the form of gas.

The carbonates may be divided into three great families: the alkaline, the earthy, and the metallic. 1st. The alkaline carbonates have an acrimonious taste, tinge vegetable blues green, and are soluble in water, and insoluble in alcohol. 2d. The earthy carbonates are insipid, and insoluble in water, but soluble in water saturated with carbonic acid. 3d. The metallic carbonates scarcely differ in appearance from the metallic oxyds.

Chalk. *Carbonate of Lime.*

The white chalk, is a carbonate of lime found abundantly in nature; it always contains more or less earth, from which, and other impurities, it is freed by levigation and washing. It is then termed prepared chalk, and is very commonly employed as an antacid. As the salt it forms with the acid in the stomach, has no purgative quality, it is the one commonly employed to check diarrhœa proceeding from acidity. It is given in the dose of one or two drachms, with the addition of a small quantity of any aromatic. The *chalk julep* will be found a valuable preparation.

Copper. *Cuprum.*

This has a more perceptible smell and taste than any other metal. Its effects when taken into the stomach, are highly deleterious and often fatal. It particularly affects the first passages, exciting excessive nausea, vomiting, colic pains and purging, sometimes of blood, or, though more rarely, obstinate constipation, and other violent symptoms of mineral poison.

Great care ought to be taken that acid liquors, or even water designed for internal use, be not suffered to stand long in vessels made of copper; otherwise they will dissolve so much of it as to give them very dangerous properties. But although copper be thus dangerous, some preparations of it have been used in certain cases, both externally and internally. Its tonic power, like that of zinc, is estimated by its successful exhibition in epilepsy, and some other spasmodic diseases.

Verdigris.—This substance is a kind of rust of copper, prepared by corroding the metal with vinegar. Verdigris is never used internally: applied externally, it proves a gentle detergent and escharotic, and is employed to destroy callous edges, or fungous flesh in wounds, cancers, &c.

Epsom Salt. *Sulphate of Magnesia.*

This salt is found in mineral waters, whence it has been extracted, but it is at present principally prepared by art from the liquor remaining after the crystallization of sea salt from sea water, which holds a quantity of muriate of magnesia dissolved. When pure, it forms large, regular crystals. They are soluble in nearly an equal weight of water. Their taste is extremely bitter.

This salt is used as a very common purgative, in dose of an ounce or more, dissolved in a large quantity of water. Though its taste is loathsome, it remains better on the stomach than many other cathartics, especially when given in small repeated doses. It is a mild and gentle purgative, operating with considerable efficacy, and with safety. It is of a cold nature, however, and apt to have a debilitating effect, inducing weakness of the blood, dropsy, &c. For these reasons, I never prescribe it.

Glauber's salt, or sulphate of Soda, possesses qualities similar to the above, and is exhibited in the same manner, except that a smaller dose is required; from half an ounce to an ounce being sufficient.

Ether. *Sulphuric Ether.*

Ether, properly prepared, has a penetrating diffusive odor, and a very pungent taste. It is highly volatile evaporating rapidly at the common temperature of the atmosphere. It is soluble in ten parts of water, and combines with alcohol in every proportion. The different ethers, as produced by different acids, vary in their composi-

tion and proportions. They are the lightest and most volatile of all known fluids, and are highly inflammable.

In their medicinal powers the ethers resemble alcohol, but they are rather less permanent in their action.

Sulphuric ether, or that obtained by the action of sulphuric acid on alcohol, is principally used. As a medicine taken internally, it is an excellent antispasmodic, cordial and stimulant. It has been used in cases of rheumatism, gout, and whooping coughs with success. In a paroxysm of suffocating asthma, and all those diseases where the organs of respiration are effected, half a tea spoonful of ether, in a table spoonful of water, quickly swallowed and occasionally repeated, has often produced instant relief. It is given as a cordial in nausea, and in febrile diseases of the typhoid type; as an antispasmodic in hysteria, and in other painful and spasmodic diseases; as a stimulus in sleepy and apoplectic affections: and to mitigate the unpleasant sensation of sea sickness. Generally, practitioners seldom give so much as half an ounce, much more frequently only a few drops for a dose; but others, more bold, have sometimes ventured upon much larger quantities, with incredible benefit.

When applied externally it is capable of producing two very opposite effects, according to its management; for if it be prevented from evaporating by covering the place to which it is applied by closely applying the hand, it proves a powerful stimulant and rubefacient, and excites a sensation of burning heat. In this way, it is frequently used for removing pains in the head; and it is said that, applied to the affected jaw, and repeated till the pain cease, it is a never failing remedy for the toothach. But if it be dropped on any part of the body, exposed freely to the contact of the air, its rapid evaporation produces an intense degree of cold: in this way it has frequently facilitated the reduction of strangulated hernia.

Hart's or Stag's Horns.

The horns of the common male red deer have long been considered as an article of materia medica. The scrapings or raspings of these horns are medicinal, and employed in decoctions, ptisans, or cooling drinks. Hartshorn jelly is remarkably nourishing and sometimes given as an agreeable demulcent in cases of diarrhœa. The coal of hartshorn which is prepared by exposing it to a strong and long continued fire, changes it to a very white earth, called *calcined hartshorn*. It is employed as an absorbent, and likewise in dysenteries, which are supposed to arise from acrid and ill-digested matter. These animal horns are to be considered of the same nature as bones; and their products by heat are those of animal substances in general. They were formerly so much employed for the preparation of the volatile alkali (ammonia) that it was commonly called hartshorn.

Honey. *Mel.*

A sweet fragrant vegetable juice, collected by bees from the flowers of various plants, and deposited in the cells of the comb. The honey

produced by young bees, and which flows spontaneously, is purer than that expressed from the comb; whence it is called virgin honey: the best sort is of a thick consistence, and a whitish color inclining to yellow; it possesses an agreeable smell and pleasant taste. In some situations, where noxious plants abound, poisonous honey is met with, from the bees feeding on such flowers. As an article of food, when immoderately used, honey is pernicious to weak stomachs; it ought therefore to be avoided by persons liable to eruptions of the skin, or in whom there is a redundancy of bile. This vegetable substance contains an acid similar to that of sugar, but is more spirituous; hence it readily ferments, occasions flatulency, and and in some habits produces gripes and looseness. As a medicine, however, it is a very useful, aperient and expectorant, especially when it has been previously boiled; in which state it may be used with safety and advantage by asthmatic patients: for it tends to dissolve viscid humors and promote the expectoration of tough phlegm.

Iron. *Ferrum.*

A metal very abundant in nature, of a bluish gray color, ductile, scarcely fusible but easily oxydated in atmospheric air, and subject to rust.

The general virtues of this metal, and the several preparations of it are, to constringe the fibres, to quicken the circulation, to promote the different secretions in the remoter parts, and at the same time to repress inordinate discharges into the intestinal tube. After the use of them, if they take effect, the pulse is very sensibly raised; the color of the face, though before pale, changes to a florid red; the uterine, urinary and cuticular eruptions are increased.

When given improperly, or to excess, iron produces headach, anxiety; heats the body, and often causes hemorrhages, or even vomiting, pains in the stomach, spasms and pains in the bowels.

Iron is given in most cases of debility and relaxation; in passive hemorrhages; in dyspepsia, hysteria and green sickness; in most of the cachexia; and, in general debility, produced by disease or excessive hemorrhagy.

When either a preternatural discharge, or suppression of natural secretions, proceed from a languor and sluggishness of the fluids and weakness of the solids; this metal by increasing the motion of the former, and the strength of the latter, will suppress the flux, or remove the suppression; but where the circulation is already too quick, the solids too tense and rigid, when there is any stricture or spasmodic contraction of the vessels, iron, and all the preparations of it, will aggravate both distempers.

Iron is employed in the following preparations:

The Black oxyde of Iron—Such are the scales of iron found at the foot of the blacksmith's anvil. In these, the iron is oxydized to that degree in which it is soluble in acids, without the production of hydrogen gas: therefore, when taken into the stomach, they do not produce the distention and flatulence occasioned by the use of iron filings.

Rust of Iron.—Carbonate of iron. Moisten purified filings of iron frequently with water, that they may be converted into rust, which is to be ground into an impalpable powder.

During exposure to air and moisture, iron is oxydated, and this oxyd is found combined with carbonic acid, absorbed, probably, from the atmosphere.

As a chalybeate, it is more active than the pure metal, and more mild than the other saline combinations of iron. Its dose is from ten to twenty grains.

Precipitated carbonate of Iron.—This is precipitated from a solution of sulphate of iron with carbonate of soda. The precipitate when first formed, contains the iron in the state of black oxyd; but in the process of drying, it absorbs more oxygen, becomes of a red color, and is converted into the carbonate of red oxyd of iron.

This carbonate of iron is an excellent and safe chalybeate. It may be given as a tonic in doses of from five to thirty grains; but all chalybeates answer better in small doses frequently repeated, than in large doses.

Salt of Steel.—Sulphate of iron. This is one of the most active preparations of the metal, and is frequently employed in cachectic cases, and green sickness, for exciting the uterine discharges, strengthening the tone of the viscera, and destroying worms. Its medium dose is from three to five grains.

There are other preparations of iron, as the martial flowers, the red oxyd of iron, dried sulphate of iron, &c. but they are superseded, and out of use.

Lead. *Plumbum.*

The effects of lead on the body are emaciation, violent colics, paralysis, tremors, and contractions of the limbs; as they generally come on gradually, the cause is sometimes overlooked until it be too late. Poisoning from lead is occasioned, either from liquors becoming impregnated with it by being improperly kept in vessels lined with that metal, or to which lead has been criminally added to correct its acidity; or among manufacturers who work much with lead, as painters and plumbers, and who are not sufficiently attentive to avoid swallowing it. The following preparations of lead have been used for medicinal purposes.

Sugar of Lead.—Like other preparations of lead, this is a violent poison. Its internal use though often ventured upon, is entirely to be rejected. It forms, however, a valuable external application, in superficial and phlegmonic inflammations, bruises, and diseases of the skin. It is always applied in solution, either simply, as to the eyes, or by means of cloths soaked in it, or mixed with bread crumb. A drachm with five ounces of any distilled water, forms a strong solution, and with ten ounces of water, a weak solution. If common water be used, the addition of about a drachm of vinegar will be necessary to keep it in solution. It is frequently employed as an injection in gonorrhœa, and an eyewater for inflamed eyes.

Goulard's Extract of Lead, is made by simmering one pound of

litharge in two pints of strong vinegar, for an hour and a quarter, stirring it continually; and after it has stood to settle, pour off the liquor into bottles for use.

This is the original preparation of Goulard, a French surgeon, who many years since introduced it into practice under the name of *extract of saturn*; one hundred drops of which, with four tea spoonsful of brandy, mixed with a quart of water, form his famous *vegeto mineral water*. The proportion of the extract may be increased or diminished, according to the nature of the disorder, or the less degree of sensibility of the part affected. In his treatise on the virtues of lead, the author has bestowed on this preparation high commendation, as a remedy in various external diseases, such as inflammations, burns, bruises, strains, piles and ulcers. He likewise prepares with his extract a number of other compositions, as cataplasms, plasters, ointments, cerates, &c. which he affirms are happily adapted to the indications, in phlegmon, schirrous and indolent tumors, stiffened joints, and other rigid states of the tendons. Every purpose, however, to be answered by these, may probably be obtained from the employment of the other preparations of lead in common use.

Lime. *Calx.* Quick lime.

This article is a soft, white, friable substance, prepared from marble, chalk, and other calcareous earths, by the process of calcination. All calcareous earths, whether in the form of marble, lime-stone, chalk, marine shells, &c. are convertible into quicklime by the action of heat.

These substances are found in a state of combination with the carbonic acid or fixed air. During the process of calcination, the carbonic acid is expelled from the carbonates, in the state of gas or air; and the product is quicklime in a caustic state. As the quicklime attracts moisture and carbonic acid from the atmosphere, it should always be recently prepared or preserved in very close bottles for medicinal use.

On the living body, lime acts as an escharotic, and as such was formerly applied to ill-conditioned sores; but it is now principally used in pharmacy, for the purpose of forming lime water, and as a chemical agent, in several preparations.

Lime Water.—Preparation: take of lime recently burnt half a pound; put it into an earthen vessel and sprinkle on it four ounces of water, keeping the vessel shut, while the lime grows hot, and falls into powder. Then pour on it twelve pounds of water, and mix the lime thoroughly with the water by agitation. After the lime has subsided, repeat the agitation; and let this be done about ten times, always keeping the vessel shut, that the free access of the air may be prevented. Lastly, let the water be filtered through paper, placed in a funnel, with glass rods interposed between them, that the water may pass as quickly as possible. It must be kept in very close bottles.

Lime water is transparent and colorless. It has an austere, acrid taste, and affects vegetable colors as the alkalies do. When applied

to the living fibre, lime water corrugates and shortens it; it therefore possesses astringent powers. It is also a very powerful antacid; or at least, it combines with and neutralizes acids when it comes in contact with them. It dissolves mucus, and kills internal worms. From possessing these properties, it is used as medicine, in diseases supposed to arise from laxity or debility of the solids, as diarrhœa, diabetes, fluor albus, asthma, scrofula, and scurvy; in affections of the stomach accompanied with acidity and flatulence, when the intestines are loaded with mucus; and in worms. Lime water is scarcely capable of dissolving, even out of the body, any of the substances of which urinary calculi consists; it has therefore no pretensions to the character of a lithontriptic. It has also been recommended in the scabby crust on the faces of children, in cancer, and chronic cutaneous diseases. Externally it is applied to ill conditioned ulcers, gangrenous sores, as a wash in scald head, and itch; and as an injection in gonorrhœa, fistulas and ulcers of the bladder. When taken internally, its taste is said to be best covered by luke warm milk. Its dose is commonly from two to four ounces, frequently repeated; but when long continued it weakens the organs of digestion.

Lunar Caustic. *Nitrate of Silver.*

To form this substance, silver is oxydized and dissolved by nitrous acid. It is a strong caustic, and possesses the advantage of being easily applied. It is therefore the one in most general use, for consuming fungous excrescences, callous edges, warts, strictures in the urethrea, and the like. It is also employed to destroy the venereal poison in chancres, before it has operated on the system. A weak solution of it may be applied as a stimulus to indolent ulcers, or injected into fistulous sores.

Magnesia Alba. *Carbonate of Magnesia.*

The carbonate of magnesia, is a very light, white, opake substance, without smell or taste, effervescing with acids. It is principally given to correct acidity of the stomach, and in these cases to act as a purgative; for solutions of magnesia in all acids are bitter and purgative. A large dose of magnesia, if the stomach contain no acid to dissolve it, neither purges, nor produces any sensible effect; a moderate one, if an acid be lodged there, or if acid liquors be taken after it, procures several stools; whereas the common absorbents, under the same circumstances, instead of loosening, bind the belly.

When the carbonate of magnesia meets with an acid in the stomach, there is extricated a considerable quantity of carbonic acid gas, which sometimes causes uneasy distension of the stomach, and the symptoms of flatulence. In such cases, therefore, magnesia is preferable to its carbonate; but on other occasions, good effects arise from the action of the gas evolved, as in nausea and vomiting. It is given as an antacid, in a dose of from a scruple to a drachm.

Magnesia. Calcined Magnesia.

Let carbonate of magnesia be put into a crucible, and kept in a red heat for two hours; then put up in close stopped glass vessels. By this process the carbonate of magnesia is freed from its acid and water.

In medicine, it is used for the same general purposes as the carbonate. In certain affections of the stomach, accompanied with much flatulence, magnesia is preferable, both because it contains more magnesia in a given bulk, and being deprived of its acid, it neutralizes the acid of the stomach, without extricating gas, which is often a very troublesome consequence, when carbonate of magnesia is employed in these complaints.

Mercury. Quicksilver.

Mercury is a mineral fluid about fourteen or fifteen times heavier than water: it is so remarkably thin, that it requires the intense cold of 40° below 0 of Fahrenheit to render it solid.

Quicksilver is sometimes found in a native state, as in the mines of India, South America, Hungary, &c. but more generally mixed with metals, stone or other substances.

Mercury taken into the stomach in its metallic state has no action on the body, except what arises from weight or bulk. It is not poisonous, as was vulgarly supposed, but perfectly inert. But in its various states of combination it produces certain sensible effects. It quickens the circulation, and increases all the secretions and excretions.

Mercury is the "king cure-all" of the mineral practice, and it is employed by them to answer nearly all intentions. According to circumstances, the habit of the patient, the temperature in which he is kept, the nature of the preparation, and the quantity in which it is exhibited, its effects are indeed various; it sometimes increases one secretion more particularly, sometimes another, but its most characteristic effect is an increased flow of saliva, which it generally excites, if given in sufficient quantity. It has been considered the most general evacuant belonging to the materia medica.

In the mineral practice, mercury, in some of its preparations, is exhibited.

1. As an errhine. The sub-sulphate of mercury.
2. As a sialagogue. Mercury in almost any form.
3. As a cathartic. The sub-muriate of mercury (Calomel.)
4. As a diuretic. The oxydes, the muriate, and sub-muriate, combined with other diuretic.
5. As a sudorific. Calomel conjoined with a sudorific regimen.
6. As an emmenagogue.
7. As an astringent. Muriate of mercury, (corrosive sublimate.)
8. As a stimulant. Corrosive sublimate.

9. As an antispasmodic.
10. As an anthelmintic.

Among the many diseases in which mercury is employed, the venereal is the principal. Its mode of operation in this case has given rise to many disputes. Some ascribing its efficacy to the evacuation it occasions; others considering it as an antidote to the venereal poison; while some ascribe its efficacy to its general and permanent stimulant operation, which they believe to be of a peculiar kind, and by which it induces and keeps up an action incompatible with that which constitutes the venereal disease, till at length the virus is changed, or alienated from the body by the usual discharges. The latter opinion, originally proposed by Mr. Hunter, seemed to afford the most satisfactory solution. For the cure of syphilis, mercury is administered until the gums are affected, or until moderate salivation is excited; and this is kept up for some time, longer or shorter, according to the kind and violence of the symptoms. Cold is to be guarded against, as tending to induce profuse salivation, rheumatic pains, and other distressing effects. When profuse salivation takes place, it may be moderated by gargling with wild indigo decoction, or the nanny bush, or black cohush, together with a brisk cathartic.

Mercury occasionally attacks the bowels and causes violent purging, even of blood. This effect is remedied by intermitting the use of the medicine, and by exhibiting opium, &c.

At other times it is suddenly determined to the mouth, and produces inflammation, ulceration, and an excessive flow of saliva. In this case, too, the mercury must be discontinued for a time; while, according to Mr. Pearson's advice, the patient should be freely exposed to a cold dry air, with the use of wild indigo, and other antiseptics as recommended above, and occasionally, cathartics. On the other hand, the sudden suppression of salivation is not without danger. It is most frequently caused by cold liquids being taken into the stomach, or exposure to cold air and moisture, while under the influence of mercury. The danger, (they say) is to be obviated by the quick introduction of mercury so as to affect the gums, with the occasional use of the warm bath.

Often, also, a morbid condition occurs during a mercurial course, and which tends to a fatal issue. It is characterized by a great depression of strength; a sense of anxiety about the heart; frequent sighing; trembling, partial or universal; a small, quick pulse; sometimes vomiting; a pale contracted countenance; a sense of coldness, while the tongue is seldom furred, or the vital or natural functions much disordered. In this state a violent or sudden exertion of the muscular power will sometimes prove fatal.

To prevent dangerous consequences, (they say), the mercury must be discontinued, whatever may be the stage, extent, or violence of the disease for which it has been exhibited, and the patient must expose himself freely to a dry, cool air, in such a manner as shall be attended with the least fatigue; and in the course of ten or fourteen days, he will sometimes be so far recovered that he may safely resume the use of mercury.

My method, however, of preventing the dangerous consequences of mercury, and the only one which can be confided in with certain-

ty, is *never to prescribe it.* Should it become necessary at any time, however, for us to counteract its baneful effects, it is to be effected by the use of vegetable alteratives, as sarsaparilla, guaiacum, dock, wild indigo, nanny bush, cohush, &c.

Quicksilver, in its native state, may be advantageously prescribed in the first stage of the iliac passion, before the bowels are too much weakened and corroded by the stagnant fœces; especially if it be given with castor oil, or fat broth, but no spice. There are instances in which several ounces, nay, half a pound and upwards of pure quicksilver have been swallowed with the happiest effects. But in the last stage of obstinate and violent colics, when inflammation and gangrene have already taken place in the bowels, its specific gravity would infallibly rend the intestines, and accelerate the fatal crisis.

Corrosive Sublimate—Muriate of mercury. This is prepared by boiling purified quicksilver in sulphuric acid, till it is dry, in a sand bath. Mix the matter when cold, in a glass vessel, with the muriate of soda, then sublime it in a glass cucurbit.

Muriate of mercury is one of the most violent poisons with which we are acquainted. Externally it acts as an escharotic or caustic; and in solution, it is used for destroying fungous flesh, and for removing herpetic eruptions; but even externally, it must be used with very great caution. It has, however, been given internally, and it is the active ingredient of most of the anti-venereal syrups; but it is supposed to possess no advantage over the common forms of mercury. It is given in the form of solution, in water or alcohol, the dose being increased from the sixth to the fourth of a grain, night and morning, mucilaginous diluents being taken freely, with the occasional use of opium.

Externally it is employed as a caustic in chancre and venereal ulcers of the mouth, in solution.

Calomel.—Sub-muriate of quicksilver. This is made by triturating corrosive sublimate and quicksilver together, and afterwards subliming it. This preparation differs from the former, in being perfectly insipid, and insoluble in water or in alcohol.

Calomel is considered one of the most useful preparations of the metal. By proper managment, it may be made to increase, in a remarkable manner, almost any of the secretions, or excretions. As an anti-venereal it is given in doses of a grain, night and morning; or in larger doses, its usual determination to the intestines being prevented, if necessary, by opium. Thus directed, (they say,) this preparation is capable of curing syphilis in every form. It is the preparation which is most usually given in the other diseases in which mercury is employed. It is employed as a cathartic alone, or to promote the operation of other purgatives: with jalap, it forms the favourite cathartic of Dr. Rush, in bilious and yellow fevers; and with rhubarb it is highly extolled in dysentery. As a vermifuge it is tolerably certain: a child between the ages of two and four years, in general, may take from one to three grains at a dose, in syrup.

As a cathartic, its dose for an adult may be from five to ten or twenty grains, or more. It should never be trifled with; and during its exhibition, confinement to an equable temperature in a room, is

indispensable. The best way to give it is in small doses, regularly, so that the effects may be gradually exerted on the system. Calomel, in latter years, has been extensively used as a medicine; and its effects are quite apparent in the proportionate increase of dyspepsia, consumption, &c.

The *Red* and *White Precipitates* of mercury are used only externarlly in ointments for cutaneous affections.

Factitious Cinnabar.—Red sulphuret of quicksilver. This consists of quicksilver and sulphur, melted together, powdered, and sublimed. It is sometimes used in fumigations against venereal ulcers in the nose, mouth, and throat. Half a drachm of it burnt, the fume being imbibed with the breath, has occasioned a violent salivation. This is the common *vermillion.*

Muriatic Acid. Spirit of sea salt.

The spirit of sea salt is the weakest of the mineral acids, but stronger than any of the vegetable. It is sometimes given, properly diluted, as an antiphlogistic, aperient, and diuretic, from ten to sixty or seventy drops. It is said to have been employed with great success in low stages of putrid and malignant fevers. The internal use of it, however is liable to many objections which must ever prevent its general adoption.

Musk. From the Musk Deer.

The substance contained in a follicle situated near the navel.

The musk animal is an inhabitant of China, India and Tartary. It is a gentle and timid animal, and in general form resembles the deer tribe. In the male, behind the navel, and before the prepuce, there is situated an oval bag, about, three inches long and two broad. In the adult animal this sac is filled with a secreted matter, known by the name of musk.

Fine musk comes to us in thin round bladders, which are generally about the size of a pigeon's egg. The musk itself is dry, with a kind of unctuosity, of a dark reddish brown, or rusty black color, in small round grains, with very few hard black clots, and perfectly free from sandy or other visible foreign matter. Its taste is somewhat bitterish, and its smell extremely powerful and peculiar. Musk yields a part of its active matter to water, by infusion; by distillation the water is impregnated with its flavor; alcohol dissolves it, the impurities excepted.

Musk is a medicine of very great efficacy, and for which, in some cases there is hardly any substitute. When properly administered, it sometimes succeeds in the most desperate circumstances. It raises the pulse without heating much; it allays spasms, and operates remarkably on the brain, increasing the powers of thought, sensation and voluntary motion. It is administered with advantage in the greater number of spasmodic diseases, especially in hysteria

and hiccup. In typhus it is employed to relieve the twitching of the tendons and other symptoms of a spasmodic nature. In cholera morbus it frequently stops vomiting, and, combined with ammonia, it is given to arrest the progress of gangrene. It is also used with the greatest advantage in eruptive and phlegmonic diseases, accompanied with typhoid fever, and also in chin cough, epilepsy, &c. Its dose is from six to twenty grains, repeated, if necessary, every five or six hours. It is best exhibited in the form of a bolus. To children it is given in the form of clyster, and is an efficacious remedy in the convulsions arising from dentition.

Nitre. *Nitrate of Potash.* Salt-Petre.

This salt consisting of nitric acid and potash, is found ready formed on the surface of the soil in warm climates; it is procured in some parts of the United States.

Nitre is of a sharp, bitterish, penetrating taste, followed by a sensation of coldness. When pure it dissolves in about six times its weight of water, and on evaporating, the latter concretes into transparent crystals.

Purified nitre has been employed in numerous disorders. Its virtues are those of a refrigerant and diuretic. It is usually given in doses, from two or three grains to a scruple, being a very cooling and resolvent medicine, which by relaxing the spasmodic rigidity of the vessels, promotes not only the secretion of urine, but at the same time insensible perspiration, in febrile disorders; while it allays thirst and abates heat; though in malignant cases in which the pulse is low, and the patient's strength is exhausted, it produces contrary effects. Nitre, however, in the manner in which it is generally employed, has the effect to "kill" and keep down the fever, without removing its cause; and is therefore injurious.

This powerful salt, when inadvertantly taken in too large quantity, is one of the most fatal poisons. There are several attested cases on record, and some recent instances might be added, in which from half to a whole ounce of salt petre has occasioned violent vomiting, convulsions, swelling, and other painful symptoms in persons, who by mistake, had swallowed it in a dissolved state, instead of Glauber, or similar salts. The most proper antidote in such distressing situations, will be a scruple or half a drachm of ipecac, with a tea cupfull of sweet oil, and a large quantity of warm water to be drank after it, to promote its operation, as an emetic It will be necessary also to make use of copious and frequent draughts of mucilaginous decoctions, of marsh mallows, pearl barley, arrow root, &c. after which a gentle opiate will afford relief.

Nitric Acid. *Aqua Fortis.*

Nitric acid, and nitrous acid have been long employed as powerful pharmaceutic agents. They are next in strength, to the sulphuric, and dislodge all others from alkaline salts and earths. Under the

name of *aqua fortis*, the nitrous acid of a certain strength has long been employed for various purposes in the arts and manufactures. Great caution should be observed in the use of this powerful liquid. In casualties when a person has, by mistake, swallowed a portion of aqua fortis, luke warm water ought to be drank in the greatest possible quantity, even to the amount of several gallons, to weaken the causticity of the poison, and to avert the immediate danger of suffocation. Next, a solution of half an ounce of pearl ashes, in one pint of water, should be taken in about six or eight draughts; and as the effervescence thus occasioned in the stomach, greatly tends to weaken that organ, it will be necessary to make use of more water and other diluent, oily, or mucilaginous drinks.

The use of these acids in medicine has latterly been considerably extended. In the state of vapor, they have been used to destroy contagion in hospitals, ships, and other places where the accumulation of animal effluvia is not easily avoided. The fumigation of such places with the vapor of nitric acid has certainly been attended with success; but we have heard that success ascribed entirely to the ventilation employed at the same time. Ventilation may certainly be carried so far that the contagious miasmata may be diluted to such a degree that they shall not act on the body; but it appears to us no less certain, that these miasmata cannot come in contact with nitric acid, or oxymuriatic acid vapor, without being entirely decomposed, and completely destroyed. It is, besides, applicable in situations which do not admit of sufficient ventilation. The means of diffusing it are easy; half an ounce of powdered nitre is put in a saucer, which is placed in a pipkin of heated sand. On the nitre two drachms of sulphuric acid are then poured. The fumes of nitric acid immediately begin to rise. This quantity will fill a cubic of ten feet; and by employing a sufficient number of pipkins, the fumes may easily be made to fill an apartment of any extent. After the fumigation, ventilation is to be carefully employed.

The internal use of these acids has also been lately much extended. In febrile diseases, water acidulated with them, forms a good antiphlogistic and antiseptic drink, for such as prefer it. Its virtues in syphilis and liver complaint have been considerably extolled, though latterly it is not much depended on.

Pearl Ashes. *Impure carbonate of Potash.*

The manner of the preparation of potash is familiar to most American people, and needs no description. These salts however, being mixed with many impurities, are again burnt in a reverbatory furnace, and in this state, although not free from impurities, it receives the name of *pearlashes*. This is the fixed vegetable alkali; and was formerly known under the names of sal absinthii, sal tartari, and kali. But, since the fixed vegetable alkali, from whatever vegetable it has been produced, is one and the same thing, those several terms, as leading to error, have been expunged, and the new chemical term of *potassa*, universally adopted.

The best vegetable alkali is obtained from weeds, the ashes of

which yield a larger proportion of salts, than most kinds of wood; and among these, wormwood is said to produce the largest quantity. This kind of salt never pre-exists in the vegetable, but is always generated during the burning. These salts are acrid and caustic.

Potassa is of extensive use in medicine, and particularly serviceable in complaints of the stomach and intestines, produced by acids. The medicinal virtues of this salt are to attenuate the juices, resolve obstructions, and promote the natural secretions. A diluted solution of it, drank warm in bed, generally excites sweat; if that evacuation is not favored, its sensible operation is by urine. When acidities abound in the first passages, this salt absorbs the acid, and unites with it into a mild, aperient, neutral salt. As one of its principal effects is to render the animal fluids more thin, it is obvious that where they are already colliquated as in scurvies, and in all putrid disorders in general this medicine is improper.

The common dose of this salt is from two or three grains to a scruple, or even to a drachm. Its acrimony must, however, be sheathed with some mucilage, or largely diluted with some watery liquors.

But pearl ash is more frequently employed in a neutralized state with vegetable acids. It is of late employed in calculous complaints, but its continued use seldom fails to injure the constitution, or the intestinal canal.

It is applied externally in solution as a lotion to open the pores of the skin when constricted in a parching hot fever; it is also used as a stimulant to the inactive state of the vessels, in certain foul ulcers.

Carbonate of potash, acetite of potash, sulphate of potash, and other preparations from this base, generally possess much the same qualities.

Cream of Tartar.—Super tartrite of potash—is a concrete saline matter, which separates from wines after they have undergone complete fermentation; it adheres to the top and sides of the cask, in red, or whitish grey crystals, according to the color of the liquor. In this state it is called crude tartar, and when purified, crystals, or cream of tartar.

This salt is a mild, cooling, aperient and laxative medicine, if half or a whole ounce of it be taken in substance, with treacle or any other vehicle, it proves an effectual purgative. Further, when dissolved in water, it affords, with the addition of sugar, an agreeable acidulated drink, which is of great service in ardent fevers; and likewise forms a pleasant beverage during the summer. It is also to be regarded as a valuable diuretic, and one which is efficacious in the treatment of dropsy. It is given under two modes of exhibition in which its effects are somewhat different. When given dissolved in a large quantity of water, to the extent of four or six drachms a day, it acts simply as a diuretic; when given to the same extent, gradually increased, in the form of an electuary, without the free use of diluents, along with a more or less diuretic effect, it acts as a hydragogue cathartic. The latter is the more usual, and perhaps, the more successful mode of exhibition.

Phosphorus.

Phosphorus has never been found pure in nature. It is always met with united to oxygen, or in the state of phosphoric acid: in this state it exists very plentifully, and is united to different animal, vegetable and mineral substances. It is principally obtained from bones, and urine. Phosphorus is one of the component principles of animal substances.

Phosphorus was scarcely known before it was employed as a medicine. But it has been principally, in latter times, that phosphorus has attracted the attention of a large number of distinguished physicians who have made it an object of their particular attention.—Amongst others who have written upon the subject, and related their experiments, is Dr. Lobstein, whose treateis contains many interesting and surprising facts, well worthy the attention of physicians.

The form which appears to be most advantageous for the exhibition of phosphorus, is its solution in sulphuric ether. It is the only form in which it can be employed without danger; because from a state of causticity the ether reduces it to a stimulating and strengthening restorative substance. It is also advantageous to add to the phosphoric ether a small quantity of distilled aromatic oil. The remedy thus becomes more active, and operates more regularly; the solution of the caustic is more perfect. To prevent its decomposition, it should be given in a little syrup, or on a lump of sugar.

The dose is not an object of less importance to be considered; how perfect soever may be the form of a medicine, if we transcend the proper dose, evil consequences may ensue. Experience has proved, that in a majority of cases one grain of phosphorus is a sufficient quantity to be taken in twenty-four hours. A general rule to be observed in prescribing phosphorus, is to commence with small doses, and to augment or diminish them as circumstances may dictate; and to discontinue its exhibition in those cases in which it produces excessive burning in the stomach, or vomiting.

Phosphorus is a remedy which extends its action over every part of the animal economy, but it is in the nervous system that it more particularly demonstrates its power. Its action is very prompt, intense, but not durable. It is one of the most powerful of the volatile stimuli, and is particularly calculated to revive failing vitality.

In acute diseases, as typhus, nervous fevers, &c. the effects of phosphorus are manifest sometimes in the course of about four hours. The temperature of the body is restored, perspiration produced, the pulse relieved; the urine is passed in greater quantities, and contains an unusual quantity of sediment; the bowels, if they have been constipated, become relaxed: the stools have a sulphurous odour, and are luminous in the dark: delirium ceases, and the patient recovers his mental powers; gentle sleep repairs his strength; his tongue becomes clean, the appetite returns, and in fine joy seems depicted on all his person.

These phenomena are differently manifested in individuals of different ages, also in different diseases. They are less observable in

chronic diseases. When given to persons in health, it powerfully stimulates the genital organs.

It is proper, however, to remark, (says Lobstein,) that its salutary effects can only be obtained by attention to the rule previously mentioned, viz. that it should be perfectly dissolved in the vehicle in which it is given. Under such circumstances, if it is given in a mass it acts as a caustic, as a decided poison, whose impression on the nerves of the stomach and intestines causes the most acute pain, heat and convulsions, trembling, weakness, and death. These consequences are violent in proportion to the quantity of the phosphorus given. Several instances are recorded of its causing death, when rashly used.

Among the diseases recorded by Dr. Lobstein, over which phosphorus triumphed when other means failed, are nervous fevers, typhus, irregular inflammation of the lungs, intermittents, periodical headach, heartburn, rheumatism, suppressed menses, green sickness, extreme weakness of the eyes, nervous debility, mania, gutta serena, palsy, &c.; but its virtues are most strikingly displayed in the last stages of putrid malignant, and typhus fevers, when the vital spark is apparently about expiring: from this state it has often raised the patient, even when it seemed the height of folly to attempt relief. Generally, the administration of phosphoric ether should be confined to cases of debility.

Phosphoric ether is prepared in this manner: Dissolve six grains of phosphorus in one ounce of sulphuric ether: the ether must be pure and highly rectified with the muriate of lime; the common adulterated ether of the shops will not dissolve it. The solution is not completed in less than three or four days. Six or seven grains of phosphorus is the extent that is soluble in an ounce of ether. To this solution one drachm of oil of gilly flower, or clove July flower, is added. Or, the phosphorus may first be decomposed in the oil, and then added to the ether.

Phosphoric ether, recently prepared, is not decomposed by cold water, because it floats on this fluid; but when diluted with alcohol and ether mixed with water, it acquires a milky appearance, and the phosphorus is separated in the form of an extremely fine powder, and precipitated.

The dose for an adult, of the above preparation, may be from six drops, three or four times a day, to fifteen drops every two hours.—Twenty-five drops have been given in an emergency, or to prevent a fit or convulsion; but large doses should only be ventured on in extreme cases.

It is inferred, from what has been said respecting the medical use of phosphorus, (says Lobstein)—That it is a remedy, capable of producing extraordinary effects in various internal diseases—That it is extremely dangerous to administer it in substance, as in that form it is capable of acting as a caustic, and producing the most violent inflammation, gangrene, and death—That we should reject every form of its exhibition, in which it is not completely diffused throughout the vehicle in which it is given; such as pills, boluses, electuaries, emulsions, conserves, &c. from which it may become disengaged in the stomach—That its solution in sulphuric ether with the addition of a small proportion of aromatic oil appears to be the best form for its ex-

hibition—That phosphorus exhibited in this form loses its caustic quality, and becomes simply a stimulant and restorative—That much caution is necessary in the exhibition of this remedy, and it should therefore be confined to judicious hands—That it should always be given in small doses in the beginning, and its quantity increased according to circumstances, and its use gradually relinquished—That it is not to be regarded as an universal panacea, capable of curing all inveterate diseases—That it need not be used until ordinary means have been tried—That its good effects are confined to diseases of debility, and chronic agues, in which its action is momentary, but very intense—That the diseases in which it has been successful are, typhus fevers, with extreme prostration of vital energy; in cases of complicated disorder; in obstinate intermittent fevers, rheumatism, gout, chlorosis, and dropsy; and particularly in nervous disorders: such as apoplexy, fainting, paralysis, convulsions, epilepsy, mania, obstinate headach, gutta serena, and heartburn—Finally, phosphorus is found to be useful in cases of loss of blood, with diminution of strength, in emaciation, phthisis, and caries of the bones.

Soda.

Soda is obtained as well as potash, by burning vegetables. It is, however, only sea plants, or those that grow by the sea shore, that afford it: it has therefore been supposed that these plants may contain sea salt, or muriate of soda, and that it is from the decomposition of this salt that soda is derived.

Carbonate of soda—Sal æratus. This is an excellent alkali, and may be used for all the purposes of alkalies. It is preferable to potash.

Spermaceti.

Spermaceti is a fatty matter, obtained from the head of a particular species of whale above mentioned. It is purified by melting and boiling with an alkaline solution. It is then in white flakes, is unctuous and friable, and has neither taste nor smell. Its chemical properties are the same as those of the expressed oils and fats, except that it does not easily unite with the alkalies.

Its medicinal virtues are those of a mild demulcent, and as such is given in catarrh and gonorrhœa, mixed with sugar, or diffused in water by the medium of the yolk of an egg.

Sugar. From the sugar cane.

The sugar cane grows wild in both the Indies, and forms the principal object of cultivation in the West indies.

Sugar is a very wholesome and powerful article of nourishment; for during crop time, the negroes in the West Indies, notwithstanding their increased labors, always grow fat. It produces no particular effect as a medicine, except that the coarser and impure kinds

are slightly purgative. In pharmacy, it is principally employed to cover bad tastes, to give form, and to preserve more active substances. In using it for the last purpose, we must always remember that if the proportion of sugar employed be too small, it will promote instead of retarding the fermentation of the articles it is intended to preserve. Molasses or treacle is a very impure syrup, which remains after refining the sugar. Treacle is applied to many domestic economical purposes. Sugar candy is used by persons laboring under hoarseness and coughs; the violence of which it contributes to relieve, by lubricating the membranes and promoting expectoration.

Sublimed Sulphur. Flowers of Sulphur.

Sulphurs is a simple, inflammable substance, found in nature nearly pure. It is the produce of volcanic countries.

Pure sulphur is of a light yellow color; is insipid; has a faint smell, when rubbed or heated, is very fusible and volatile; and, when heated in atmospheric air, burns with a blue flame and suffocating fumes.

Flower of sulphur loosens the belly and promotes insensible perspiration; it seems to pass through the whole habit, and manifestly transpires through the pores of the skin, as appears from the sulphurous smell of persons who have taken it, and from silver in their pockets imbibing a blackish cast. It is a celebrated remedy against cutaneous diseases, both given internally and applied externally. It has likewise been recommended in coughs, asthmas, and other disorders of the breast and lungs; and particularly in catarrhs of the chronic kind. But it is probable that the benefit derived from it in these cases, is principally owing to a determination to the surface, and to its operation as a gentle laxative. And with this intention it is frequently used with great advantage in piles, and in many other diseases in which it is proper to keep the belly open. The dose is two or three drachms, in honey or molasses.

Sulphuric Acid. Oil of Vitriol.

This acid is formed from the combination of sulphur with oxygen to the point of saturation. It is obtained by the combustion of sulphur. The sulphur, reduced to powder, is mixed with from one eighth to one tenth of its weight of nitrate of potash, by which its combustion, when began, can be continued, withou tthe free access of atmospheric air. It is thus burnt in a large leaden chamber; the sulphuric acid, which is slowly formed, is absorbed by water placed in the bottom of the chamber; the acid liquor is concentrated by exposing it to heats in glass retorts, and the pure sulphuric acid is obtained. It is of thick consistence, and has an apparent unctuosity; its specific gravity is 1850; when pure, it is colorless and transparent. It strongly attracts water, which it imbibes from the atmosphere very rapidly, and in large quantities, if suffered to remain in an open vessel. If it be mixed with water it produces an instanta-

neous heat, nearly equal to that of ebullition. Its action is very strong upon all the earths, except the siliceous; upon the alkaline salts; upon many metals; and almost every other combustible substance. It is highly corrosive; and in fine, possesses all the general acid properties in an eminent degree. When sufficiently diluted, this acid is an excellent tonic, and its as tringency is considered as superior to that of any other acid. It is therefore used in spitting of blood, immoderate menses, diabetes, hectic, night sweats, and dyspepsia. From its refrigerant and antiseptic properties, it is a valuable medicine in many frebrile diseases, especially in those called putrid. Checking fermentation, exciting appetite, promoting digestion, and quenching thirst, it is exhibited with success in acidity, weakness, and relaxation of the stomach.—For administration it is diluted with water, forming what is called *elixir of vitriol.* The best mode of prescribing it is to mix the quantity of acid to be used, with as much water as will render it palatable, to which some syrup or mucilage may be added. To prevent it from attacking the teeth, it may be conveniently sucked through a quill, and the mouth should be carefully washed after each dose. It may be used as a gargle in sore throats.

Spirits or Oil of Turpentine.

Venice turpentine derives all its virtues from its essential oil, and it is in this oil, that it is generally used in medicine. It is a powerful stimulant directed more particularly in its action to the urinary passages. It has been employed in gleet, and in chronic rheumatism, especially in that form of it termed sciatica and lumbago, in a dose of from five to twelve drops, gradually increased, generally mixed with a quantity of honey, by which its pungency is covered. It is apt, however, to induce violent symptoms. Externally, it is applied as a stimulant to parts affected with cramp or rheumatism. Oil of turpentine, taken internally, has frequently succeded in destroying the tape worm. It has of late been successfully applied to scalds, and by it the pain has frequently been removed in an hour, and the formation of blisters prevented. The turpentine itself is sometimes used internally for the same purpose as its oil.

Tar.

Tar is a thick black unctuous matter, extracted from the wood of the pine, by combustion in a close smothered heat. By long boiling, tar is deprived of its volatile parts, and converted into pitch. Tar is a mixture of resin, empyreumatic oil, charcoal and vinegar. It was formerly in great repute as a medicine, both in its original state and also in infusion with water.

It has been recommended in cold and phlegmatic habits; as it not only raises the pulse, and accelerates circulation, but, at the same time, exhilarates the animal spirits. Great benefit has been derived from it as a fumigation and in a decoction, in some stages of consumption. At present, however, tar water is seldom employed, though

its external application proves to be an excellent remedy for the stings of wasps and bees. Tar is applied in the form of an ointment to scald head, and some other cutaneous diseases.

The common turpentine, obtained from the same tree, is rarely given internally; its principal use is in plasters and ointments, and for the distillation of essential oil.

VINEGAR. *Acetous Acid.*

Vinegar was known many ages before the discovery of any other acid, those only excepted which exist ready formed in vegetables. It is mentioned by Moses, and indeed seems to have been in common use among the Israelites and other eastern nations at a very early period. This agreeable pungent acid is the product of the fermentation of sweet vegetable juices. It is obtained from wine, cider, beer, the juice of the sugar maple, or other fermented liquors, which are the products of the first stage of the fermentative process. The acetous fermentation is nothing more than the acidification or oxygenation of wine, produced in the open air by means of absorption of oxygen. Vinegar is composed of hydrogen and carbon united together in proportions not yet ascertained, and changed into the acid state by oxygen. That prepared from white wine is most free from impurities. Beside the pure acetous acid, diluted with much water, vinegar contains tartarous acid, tartrite of potash, mucilaginous matter, and sometimes phosphoric acid.

Vinegar possesses strong antiseptic powers, and its action on the living body is gently stimulant and astringent. It is employed as a useful addition to the patient's drink in putrid and inflammatory fevers. In ardent, bilious fevers, pestilential and other malignant distempers, it is recommended by Boerhaave as one of the most certain sudorifics. In the form of clyster it is used in the same diseases, and in obstinate constipation. Faintings, vomiting, hysterical and hypochondriacal complaints, have been frequently relieved by vinegar applied to the mouth and nose, or received into the stomach. It is highly servicable in obviating the effects of poisonous substances of the vegetable kind, when taken into the stomach, as well as in promoting their discharge by the different emunctories, when received into the blood. When fully saturated with common salt, it has been resorted to as a valuable remedy in dysentery, and malignant sore throat; one table spoonful of this mixture, with one or two of hot water, gradually swallowed and frequently repeated, will seldom fail to induce a diaphoresis, and procure essential relief from the most distressing symptoms attending these dangerous diseases.

The same saturated mixture may also be applied to local inflammations with the happiest effects. Vinegar is applied externally in fomentations and baths as a stimulant and discutient; and its vapor is inhaled in putrid sore throat; and diffused through the chambers of the sick to correct the putrescency of the atmosphere.

Zinc.

This is a semi-metal naturally obtained in a state of combination with different minerals, in England, Hungary, and other parts of the globe ; it is of a whitish color, nearly resembling that of lead, though it does not so speedily tarnish.

From zinc several preparations are made ; under which the medicinal virtues of this article are described.

Sulphate of Zinc.—White vitriol.—This substance is produced by the oxygenization of zinc with sulphuric acid.

Sulphate of zinc, in doses of from ten grains to half a drachm, operates almost instantly as an emetic, and is at the same time perfectly safe. It is therefore given when immediate vomiting is required, as in cases where poison has been swallowed. It has been given in small doses as a tonic, but I should not advise it. Externally this medicine is used as a styptic application to stop hemorrhages, diminish increased discharges, as gonorrhœa ; and to cure the external inflammations arising from debility and relaxation of the blood vessels, as in some cases of weak eyes.

Castile or Spanish Soap.

Soap is a composition of fixed alkaline salt, in a state of combination with animal or vegetable oil ; it is sometimes dry and hard ; at others, soft and liquid ; being manufactured various ways, with and without heat.

The only difference in the various kinds of manufactured soap, is, in the oils employed in the composition. Thus the common hard soap is prepared from caustic ley, with the addition of tallow. The Venice, Castile or Spanish soap, with olive oil. The perfumed compounds known under the names of palm, violet, almonds, or other soaps are prepared in a similar manner : the oils of such vegetable substances being employed instead of those of the usual kind.

The only species which is in common medicinal use, is that composed of olive oil and soda. It is only prepared in the countries which produce the oil. For medicinal purposes, the Castile, or Spanish is preferred.

The detergent properties of soap, or the power it possesses of rendering oily or resinous substances capable of being mingled with water, has given rise to very erroneous notions of its medicinal virtues. It was supposed to render such substances more readily soluble in the juices of the stomach, and in the fluids of the body, and to be well fitted for dissolving such oily and unctuous matters as it may meet with in the body, attenuating acid juices, opening obstructions of the viscera, and cleansing all the vessels it passes through.

It has likewise been supposed to possess a powerful solvent power over the urinary calculus ; and a solution of soap in lime-water, has been considered as one of the strongest dissolvents that can be taken with safety into the stomach ; for the virtue of this composition has been thought considerably greater than the aggregate of the dissolving powers of the soap and lime water, when unmixed.

How erroneous these ideas are, appears evidently when we recollect the very easy decomposition of soap, which renders it perfectly impossible that it should enter into the circulating system, or indeed come in contact even with the fluids of the mouth without being decomposed. As to the solution of soap in limewater, we may observe, that it is a clumsy way of exhibiting soda ; for the soap is decomposed, an insoluble soap of lime is formed, and the soda remains in solution. The internal use of soap should therefore be confined, in our opinion, to the giving form to other substances which are not decomposed by it, and to decompose metallic poisons when they have been taken into the stomach. For this last purpose, a tea cupful of solution of soap in four times its weight of water, may be drank every three or four minutes, until a sufficient quantity be taken.

Applied externally it is a very powerful detergent, and combines the stimulating properties of the alkali with the lubricating nature of the oil. In this way it often proves a powerful discutient, and an useful application to sprains and bruises.

TABLE

OF

WEIGHTS AND MEASURES.

USED IN WEIGHING MEDICINES, &c.

There are two kinds of weights received in common use, by one of which gold and silver, and by the other, nearly all kinds of merchandize are estimated. In medicine, the former (Troy weight) is adopted, by which the pound is divided as follows:

The Pound, ℔	}	contains	{ Twelve ounces. ℥
Ounce,			{ Eight drachms. ʒ
Drachm,			{ Three scruples. ℈
Scruple,			{ Twenty grains. *gr.*

The signs are added by which the several weights are denoted.

To express the quantity of liquids, measures are employed which are derived from the wine gallon, and for medical purposes, it is divided in the following manner:

The gallon,	}	contains	{ Eight pints. *pt.*
The pint,			{ Sixteen fluidounces. *f*℥
The fluidounces,			{ Eight fluidrachm. *f*ʒ
The fluidrachm,			{ Sixty minims. ♏

Acid, alkaline, earthy, and metallic preparations, and salts of all kinds, should be kept in glass stopped bottles.

The degree of heat is measured by Fahrenheit's thermometer, and when a boiling heat is prescribed, it is that which is marked by the 212th degree. A gentle heat is between the ninetieth and hundredth.

Medical Prescriptions.

The principal objects designed to be attained by the composition of medicines, are, to communicate an agreeable taste and flavor; to to give a convenient form; to correct the operation of the principal medicine, or obviate some unpleasant symptom it is liable to produce; to promote its action, by the additional article exerting one of a similar kind; to obtain the joint operation of two remedies, having different powers; or to alter their usual effects, by the power which one may have of modifying the action of the other.

The following are the principal circumstances to be attended to in forming a prescription.

1st. Simplicity should be attained, as far as consistent with the object of the prescription. Nothing ought to enter into the composition which does not add to its virtue, render it less ungrateful, give it a convenient form, or what is not necessary to conceal any particular ingredient; and in general, the practice of accumulating a number of articles in one prescription is to be avoided.

2dly. Substances, it is evident, ought not to be mixed together, which are capable of entering into chemical combination, or of decomposing each other, unless it be with the view of obtaining the product of the combination, or decomposition, as a remedy.

3dly. Those mixtures are also to be avoided, in which one medicine by its peculiar action on the stomach, modifies and changes the action usually exerted by another, unless where the object is to attain the effects of that modified operation.

4thly. The error of contra-indication is to be guarded against, or those medicines ought not to be combined, the virtues of which are not merely different, but are in some measure opposed to each other.

5thly. The ingredients which are to be mixed must be such as will mix properly together, so that the form in which the remedy is designed to be exhibited, may be easily obtained and preserved.

Lastly, The form under which a medicine is prescribed, must be adapted to certain circumstances; principally to the nature of the disease, the nature of the remedy itself, and as far as may be possible, to the taste of the patient.

The doses of medicine are not reducible to any general rules, from their general similarity of operation, or any other circumstance. The principal circumstances by which they are influenced are, age, sex, temperament, idisyncrasy, habit, and disease.

Age—From infancy to manhood, a larger dose of any medicine is requisite to produce its effect, in proportion to the advance in life. From manhood to old age there is a similar gradation with regard to diminution of dose, though in much less proportion than that which regulates the increase. The following table has been supposed to shew these proportions.

Table.

Let the dose for a person of middle age be -	1 or 1 drachm.
For one from xiv. to xxi. years it will be -	$\frac{2}{3}$ or 2 scruples.
——— from vii. to xiv. - - -	$\frac{1}{2}$ or half a drachm.
——— from iv. to vii. - - - -	$\frac{1}{3}$ or 1 scruple.
——— of iv. years of age - - -	$\frac{1}{4}$ or 15 grains.
——— of iii. years of age - - -	$\frac{1}{6}$ or half a scruple.
——— of ii. years of age - - - -	$\frac{1}{8}$ or 8 grains.
——— of i. year of age - - - -	$\frac{1}{12}$ or 5 grains.
——— of 7 weeks old - - -	$\frac{1}{15}$ or 4 grains.

Sex.—Women, in general, require smaller doses of any medicine than men, a difference probably owing to their greater sensibility, from their habits of life.

Temperament.—Those of the sanguine temperament are supposed to be more affected by medicine, and therefore to require smaller doses than those of the phlegmatic or melancholic; but in what has been said on the subject, there is so much uncertainty that little reliance can be placed on it.

Idiosyncrasy.—This denotes that disposition in individuals to be affected by certain causes, in a manner different from the generality of mankind. Such peculiarities are observed with regard to medicines, as well as to other agents; and where they are known, require to be attended to by the prescriber.

Habit.—This has an important influence on the operation of medicines. In general, they lose some of their poison by having been long continued. This is particularly the case with all strong stimulants and narcotics, and is observable to a certain extent in some of the other classes of the materia medica.

Disease.—This has an influence on the doses of medicines not less important: the susceptibility to external impressions, and to action, being much varied in morbid affections, and the operations of remedies of course being modified by such variations. The state of susceptibility being in general apparent, when it varies much from the healthy standard, the doses of the medicines administered are easily regulated.

PREPARATIONS AND COMPOSITIONS

OF

MEDICINES

IN COMMON USE, NOT STRICTLY BOTANICAL.

Balsams.

The medicaments here mentioned are not natural balsams, but certain compositions, which, from their balsamic qualities, usually go by that name. This class of medicines were formerly more numerous than at present, and held in great esteem.

Anodyne Balsam.—Take of white Spanish soap, one ounce; opium, two drachms; alcohol, nine ounces. Digest them together in a gentle heat for three days; then strain the liquor, and add to it three drachms of camphor.

This balsam is intended to ease pain. It is of service in violent strains and rheumatic complaints, when not attended with inflammation. It must be rubbed with the warm hand on the part affected; or a rag may be wet with it and applied.

Locatelli's Balsam.—Take of olive oil, one pint; Venice turpentine and yellow wax, of each half a pound; red saunders, six drachms. Melt the wax with some part of the oil over a gentle fire; then adding the remaining part of the oil and the turpentine; afterwards mix in the saunders, previously reduced to a powder, and keep them stirring together till the balsam is cold.

This balsam is recommended in erosions of the intestines, the dysentery, hemorrhages, internal bruises, and in some complaints of the breast. Outwardly it is used for cleansing and healing wounds and ulcers. The dose when taken internally is from two scruples to two drachms.

Turlington's Balsam of Life.—Take of balsam of Peru, half an ounce; balsam of Tolu, one ounce; gum storax, one ounce; gum guaiacum, one ounce; gum Benzoin, an ounce and a half; hepatic aloes and frankincense, each two drachms; and dragon's blood, one ounce. Let the gums be bruised, and put the ingredients into a quart of proof brandy; put it in a warm place, (a sand heat is best,) and let it be shaken frequently for seven or eight days: it is then fit for use.

This healing balsam is applied externally to heal recent wounds or bruises, and for that purpose is second to none. It is likewise employed internally to remove coughs, asthmas, and other complaints of the breast. It is said to ease the colic, cleanse the kidneys, and heal internal ulcers, &c. The dose is from twenty to thirty drops.

An abridgment of Turlington's balsam, and which perhaps answers all its purposes, is made by taking of Benzoin, three ounces; balsam of Peru, two ounces; hepatic aloes, half an ounce; rectified spirits of wine, two pints. Digest with a gentle heat three days, and strain.

These preparations have long been celebrated under the different names of *Persian balsam*, *balsam of Berne*, *Friar's balsam*, *Jesuit's drops*, &c.

Balsam of Honey.—Take gum benzoin, one drachm; balsam Tolu, two drachms; saffron, half a drachm; honey, four ounces; alcohol, a pint. Digest. Dose, one drachm three times a day. This is very useful in cough.

Godbold's vegetable balsam.—A pound of sugar candy, dissolved by heat, in a quantity of white wine vinegar, and then evaporated to the measure of a pint; during which operation, as much garlic as possible is dissolved with it.

Cataplasms, &c.

Discutient cataplasm.—Take of barley meal six ounces; fresh hemlock or cicuta leaves, two ounces; vinegar, a sufficient quantity. Boil the meal and cicuta in the vinegar, and then add two drachms sugar of lead.

Ripening Cataplasm.—Take of white lilly root, four ounces, fat figs and raw onions, bruised, of each one ounce; yellow basilicum ointment, two ounces; gum galbanum, half an ounce; linseed meal as much as necessary. Boil the roots and figs in water; then bruise and add to them the other ingredients, so as to form the whole into a soft cataplasm. The galbanum must be dissolved previously with the yolk of an egg.

Another, perhaps equally efficacious, and less expensive, is, a poultice of bread and milk, with a sufficient quantity of either boiled or raw onions in it, and softened with oil of fresh butter.

Sinapisms.—Sinapisms are employed to recal the blood and spirits to a part, as in the palsy and atrophy; they are also applied to the feet in low fevers. The sinapism is only a poultice made with vinegar instead of milk, and rendered warm and stimulating by the addition of mustard, horse radish, or garlic.

Clysters.

Emollient Clyster.—Take of linseed tea and new milk, each six

ounces. Mix them. If fifty drops of laudanum be added to this, it will supply the place of the anodyne clyster.

Laxative Clyster.—Take of milk and water, each six ounces, sweet oil or fresh butter, and brown sugar, each two ounces. Mix them. If two table spoonfuls of common salt be added to this it will be the *purging clyster.*

Carminative Clyster.—Take of camomile flowers, an ounce; aniseeds, half an ounce. Boil to one pint. In hysteric and hypochondriac complaints, this may be administered.

Oily Clyster.—To four ounces of the infusion of camomile flowers, add an equal quantity of sweet oil. This is beneficial in bringing of the small worms lodged in the rectum.

Starch Clyster.—Take jelly of starch, four ounces; linseed oil half an ounce. Liquefy the jelly over a gentle fire, and then mix in the oil.

In the dysentery or bloody flux, this clyster may be administered after a very loose stool, to heal the ulcerated intestines, and blunt the sharpness of the corroding humors. Forty or fifty drops of laudanum may be occasionally added.

Vinegar Clyster.—This is made by mixing three ounces of vinegar with five of water gruel. This is peculiarly proper in inflamina-tory and putrid disorders, especially in the latter.

Collyria, or Eye Waters.

Alum Eye Water.—Take of alum, half a drachm; beat it with the white of an egg till it forms a curd. This curd is an excellent application for severe inflammations of the eyes, and the remaining water is efficacious as a wash. It allays the heat, and restrains the flux of humors. The curd should not be kept on more than three or four hours at a time.

Vitriol Eye Water.—Take of white vitriol half a drachm; rose water, six ounces. Dissolve the vitriol in the water, and filter the liquor.

This, though simple, possesses considerable virtue. It is an useful application in weak, watery, and slightly inflamed eyes.

Lead Eye Water.—Take of sugar of lead, and sal ammoniac, each four ounces. Dissolve them in eight ounces of common water, to which forty drops of laudanum may be occasionally added.

Conserves.

Conserves are compositions of fresh vegetables and sugar, beaten together into an uniform mass.

Conserve of red roses.—Take a pound of red rose buds, cleared of their coverings; beat them well in a mortar, and adding by degrees two pounds of double refined sugar in powder, make a conserve. After the same manner are prepared the conserves of orange peel, rosemary flowers, wormwood, the leaves of wood sorrel, &c.

The conserve of red roses is one of the most agreeable and useful preparations belonging to this class. A drachm or two of it, dissolved in warm milk, is ordered to be given as a gentle restringent in weakness of the stomach, and likewise in phthisical coughs and spitting of blood. It must be taken in large quantities, to have any considerable effects.

Candied Orange Peel.—Soak Seville orange peel in several waters, till it loses its bitterness; then boil it in a solution of double refined sugar in water till it becomes tender and transparent.

Decoctions.

Decoction of Sarsaparilla.—Take of fresh sarsaparilla root, sliced and bruised, two ounces; shavings of guaiacum wood, one ounce. Boil over a slow fire in three quarts of water to one; adding towards the end, half an ounce of sassafras wood, and three drachms of liquorice. Strain.

This is usually employed to remove the effects of mercury. It strengthens the stomach, and restores flesh and vigor to the habits emaciated by the venereal disease. It may also be taken in rheumatism, and all disorders proceeding from foulness of blood. Dose from a pint and a half to two quarts in the day.

Compound decoction of Sarsaparilla.—Take sarsaparilla root, six ounces; the bark of sassafras root, shavings of guaiacum, and liquorice root, each one ounce; the bark of mezereon root three drachms. Digest in ten pints of water with a gentle heat for six hours; then boil the liquor down to one half, adding the bark of mezereon root towards the end of the boiling. Strain. The dose is the same as the above. This was formerly the Lisbon diet drink.

Compound decoction of the Bark.—Take of Peruvian bark and the Virginian snake root, each three drachms. Boil them in a pint of water to one half. To the strained liquor add an ounce and a half of any aromatic water.

This is recommended as a proper medicine towards the decline of malignant fevers. The dose is four table spoonsful every fourth or sixth hour.

Distilled Waters and Spirits.

By distillation of water from vegetable substances, it is frequently impregnated with their flavour and taste. This is owing to their essential oil being volatilized at the temperature at which water boils, and being dissolved in small proportion by the water condensed.

Distilled water.—Let water be distilled in very clean vessels until about two thirds of it have come over.

In nature no water is found perfectly pure. Spring or river water always contains a portion of saline matter, principally sulphate of lime. By distillation a perfectly pure water is obtained.

Orange peel water.—Take of fresh orange peel, two pounds. Pour upon it as much water as shall be sufficient to prevent any empyreuma, after ten pounds have been drawn off by distillation. After due maceration, distil ten pounds.

The same quantity of water is to be distilled in the same manner, from

——Six pounds of the fresh flowers of the damask rose, to prepare damask rose water.

—— Three pounds of peppermint, in flower, to prepare peppermint water.

—— Three pounds of pennyroyal, in flower, to prepare pennyroyal water.

—— One pound and a half of spearmint, in flower, for spearmint water.

—— One pound of cinnamon bark, for cinnamon water.

—— One pound of cassia bark, for cassia water.

—— Half a pound of the fruit of pimenta, for pimenta water.

To each pound of these waters add *half an ounce of diluted alcohol.*

Spirit of Caraway.—Take of caraway seeds, bruised, half a pound; diluted alcohol, nine pounds.

Macerate two days in a close vessel; then pour on as much water as will prevent empyreuma, and draw off by distillation nine pounds.

In the same manner is prepared the same quantity of spirit, from

—— One pound of cinnamon bark: spirit of cinnamon.

—— One pound and a half of peppermint: spirit of peppermint.

—— One pound and a half of spearmint: spirit of spearmint.

—— Two ounces of nutmeg: spirit of nutmeg.

Other spiritous waters are prepared in a similar manner, and it is unnecessary to make particular observations on each.

Distilled, Volatile, or Essential Oils.

Volatile oils are prepared nearly in the same manner as the distilled waters, except that less water is to be added. The oil comes over with the water, and is afterwards to be separated from it, according as it may be lighter than the water, and swim upon its surface, or heavier, and sink to the bottom.

According to these directions are prepared the volatile oils of aniseeds, fennel seeds, juniper berries, pimenta, rosemary, lavender, peppermint, spearmint, pennyroyal, wintergreen, &c.

Volatile oils, medicinally considered, agree in the general qualities of pungency and heat; in particular virtues they differ as much as the subjects from which they are obtained, the oil being the direct principle in which the virtues of the several subjects reside. Thus the carminative virtue of the warm seeds, the diuretic of the juniper

berries, the emmenagogue of the savine, the nervine of the rosemary, the stomachic of the mint, &c. are supposed to be concentrated in their oils. The more grateful oils are frequently made use of for reconciling to the stomach medicines of themselves disgustful. They are readily imbibed by pure dry sugar, and in this form may be conveniently exhibited. Ground with eight or ten times their weight of sugar, they become soluble in water, and may thus be diluted to any degree. They dissolve likewise in alcohol; the more fragrant in an equal weight, and almost all of them in less than four times their own quantity. Volatile oils should be kept in small bottles, closely stopped in a cool place.

Fomentations.

Fomentations are generally intended either to ease pain, by taking off tension and spasm; or to brace and restore the tone and vigor of those parts to which they are applied. The first of these intentions may generally be answered by warm water, and the second by cold. Certain substances, however, are usually added to water with a view to heighten its effects, as anodynes, aromatics, astringents, &c.

Anodyne Fomentation. Take of white poppy heads, two ounces; elder flowers, half an ounce; water three pints. Boil to two pints. This fomentation is used for relieving acute pain.

Common Fomentation. Take tops of wormwood and camomile flowers dried, of each two ounces; water, two quarts. Spirits may be added, as required.

Ointments, Liniments, and Cerates.

Yellow Basilicum Ointment.—Take of yellow wax, white resin, and frankincense, each a quarter of a pound; melt them together over a slow fire; then add of hog's lard, one pound.

Employed for cleansing and healing wounds and ulcers.

Emollient Ointment.—Take of palm oil, two pounds; olive oil a pint and a half; yellow wax, half a pound; Venice turpentine, a quarter of a pound.—Melt the wax in the oils, and then mix in the turpentine.

It may be used for anointing inflamed parts, &c.

Issue Ointment.—Mix half an ounce of Spanish flies, finely powdered, in six ounces of yellow basilicum ointment.

This ointment is intended chiefly for dressing blisters, in order to keep them open during pleasure.

Ointment of Sulphur.—Take of lard, four ounces; flowers of sulphur, an ounce and a half; sal ammoniac, two drachms; essence of lemon, ten or twelve drops. Make them into an ointment.

This ointment, rubbed upon the parts affected will generally cure

the itch. It is both the safest and best application for that purpose, and when made in this way, has no disagreeable smell.

Goulard's Cerate.—Take water of acetated litharge, two ounces and a half; yellow bees' wax, four ounces; olive oil, nine ounces; camphor half a drachm. Rub the camphor with a little of the oil, and as soon as the mixture begins to thicken, pour in by degrees the water of acetated litharge, and stir it constantly till it be cold; then mix in the camphor previously rubbed with the oil.

This ointment has been rendered famous by the commendations of M. Goulard, a French surgeon. It is an excellent cooling ointment, of great use in many cases.

Tar Ointment—Take of tar, five parts; yellow wax, two parts. Melt together.

This has been successfully employed against foul ulcers, and some cutaneous affections, particularly scald head.

Ointment of Stramonium.—Take of fresh leaves of stramoinum, bruised, five pounds; lard, fourteen pounds. Let them simmer together over a gentle fire, till the leaves become crisp and dry.—Then press out the lard, return it into the vessel when cleansed, and add to every pound of the compound, two ounces of yellow wax, (bees wax.) Set the whole on the fire: when the wax has melted, remove the vessel, and let it rest while the contents gradually cool, that the impurities may subside.

This ointment has been found to afford relief in external inflammations, and piles. It is also highly beneficial in burns, and to allay the swelling of a cow's udder.

Liniment for Burns.—Take equal parts of sweet oil, of fresh drawn linseed oil, and limewater: shake them well together, so as to form a liniment.

This is found to be an exceedingly proper application for recent scalds or burns.

Volatile Liniment.—Take of sweet oil, an ounce; spirit of hartshorn, half an ounce. Shake them together.

It is said that in the inflammatory quinsy, a piece of flannel moistened with this liniment, and applied to the throat, to be renewed every four or five hours, is one of the most efficacious remedies, and seldom fails to carry off the complaint.

Turner's Cerate.—Take of prepared calamine, and yellow wax, each half a pound; olive oil, one pint. Melt the wax with the oil, and as soon as they begin to thicken, sprinkle in the calamine, and keep it stirring till the cerate is cool.

This ointment is known by this name from curing the wounds of Turners. It is generally used for broken chilblains.

Liniment for the Piles.—Take of emollient ointment, two ounces;

liquid laudanum, half an ounce. Mix these ingredients with the yolk of an egg, and work them well together.

Simple Cerate.—Take of olive oil, six parts; white wax, three parts; spermaceti, one part. Melt the wax and spermaceti together, then add the oil, stirring until the whole is cool.

Pills.

Medicines which operate in a small dose, and whose disagreeable taste or smell makes it necessary that they should be concealed from the palate, are more commodiously exhibited in this form. No medicine, however, which is intended to operate quickly, ought to be made into pills, as they often lie for a considerable time on the stomach before they are dissolved so as to produce any effect. One pill is generally calculated to weigh about five grains.

Rufus's Pills.—Take of socotorine aloes, two ounces; myrrh one ounce; saffron, half an ounce. Beat them together into a mass with a proper quantity of simple syrup.

These pills have long continued in practice, as a stimulating aperient. Given to the quantity of half a drachm, or two scruples, they prove considerably cathartic, but they answer much better purposes in smaller doses as laxatives or alteratives. Two or three for a dose.

Deobstruent Pill.—Take rust of iron, socotorine aloes, and myrrh, in powder, of each a drachm. Make into forty pills, of which two are to be taken morning and evening.

These pills are of excellent service in obstructions of the menses.

Compound Pills of Assafœtida.—Take of assafœtida, galbanum, and myrrh, each eight parts; purified oil of amber, one part. Beat them into a mass with simple syrup.

The pills are designed for anti-hysterics, and emmenagogues, and are very well calculated for answering these intentions. From two to four may be taken every night, or oftener.

Pills of Opium.—Take of opium, one part; extract of liquorice, seven parts; Jamaica pepper, two parts. Soften the opium and extract separately, with diluted alcohol, and having beat them into a pulp, mix them: then add the pepper, reduced to a powder, and form the whole into a mass.

This affords a form under which the exhibition of opium may be concealed from the patient. Each pill contains about half a grain of the opium.

Another.—Take of Castile soap, eight parts; camphor, six parts; opium, four parts. The several articles being separately powdered, mix, and beat them into a mass.

Stomachic Pill.—Take extract of gentian two drachms; powdered rhubarb, and vitriolated tartar, each one drachm; oil of mint, thirty drops; simple syrup, a sufficient quantity.

Three or four of these pills may be taken twice a day, for invigorating the stomach, and keeping the body gently open.

Strengthening Pills.—Take soft extract of bark, and rust of iron, each a drachm. Make into pills.

In disorders arising from excessive debility, or relaxation of the solids, as the green sickness, two of these pills may be taken three times a day.

Compound Pills of Rhubarb.—Rhubarb in powder one ounce; socotorine aloes, six drachms; myrrh, half an ounce; volatile oil of peppermint, half a drachm. Make them into a mass with a sufficient quantity of syrup of orange peel.

This is a moderate laxative, much employed, especially in dyspeptic affections, to obviate costiveness and greatly stimulate the intestines. Two pills are taken at bed time.

Pills for the Jaundice.—Take of Castile soap, socotorine aloes and rhubarb, each one drachm. Make them into pills, with a sufficient quantity of syrup, or mucilage.

These pills, with the assistance of proper diet will often cure the jaundice. Five or six of them may be taken twice a day, more or less, as is necessary to keep the body open.

Plasters.

Plasters ought to be of a different consistence, according to the purposes for which they are intended. Such as are to be applied to the breasts or stomach, ought to be soft and yielding; while those designed for the limbs should be firm and adhesive. Plasters are composed chiefly of oils and unctuous substances, united with oxides or powders, into such a consistence that the compound may remain firm in the cold, without sticking to the fingers: that it may be soft and pliable in the heat of the human body; yet so tenacious as readily to adhere both to the parts on which it is applied and the substance on which it is spread.

Common Plaster.—Take of litharge, one part; olive oil two parts. Having added some water, boil them, constantly stirring until the oxide and oil unite into a plaster.

This plaster is generally applied to slight wounds and excoriations of the skin. It keeps the part soft and warm, and defends it from the air, which is all that is necessary. Its principal use, however, is to serve as a basis for other plasters.

Adhesive Plaster.—Take of common plaster, two parts; Burgundy pitch, one part. Melt them together, and stir them well till cold.

This plaster is principally used for keeping on other dressings, and for retaining the lips of a wound together.

Blistering Plaster.—Take of yellow wax, pine resin, olive oil, each two parts: cantharides, in powder, three parts. To the wax,

resin and oil, previously melted together, add the cantharides, carefully stirring the whole until cool.

Blistering plasters prove highly disagreeable to some people, by occasioning strangury. As a substitute plaster, a small quantity of blistering salve may be mixed with the Burgundy pitch plaster, and laid over the part affected, suffering it to remain as long as it will stick. This will act for many days, and seldom fails to remove pain, or slight obstructions.

Anodyne Plaster.—Melt an ounce of adhesive plaster, and while it is cooling mix with it a drachm of powdered opium, and the same quantity of camphor, previously rubbed up with a little oil.

This plaster will generally give ease in pain, especially of the nervous kind.

Compound Burgundy Pitch Plaster.—Take of Burgundy pitch two pounds; gum labdanum, one pound; yellow resin and yellow wax, each four ounces; and oil of mace, one ounce. To the pitch, resin and wax melted together, add first the labdanum, and then the oil of mace.

This plaster, or Burgundy pitch alone, worn continually upon the breast, or between the shoulder blades, will be of more benefit in the long continued winter coughs, than all other remedies.

Gum Plaster.—Take of the common plaster, four pounds; gum ammoniac and galbanum, strained, of each half a pound. Melt together, and add, of Venice turpentine, six ounces.

This plaster is used as a digestive, and likewise for discussing indolent tumors.

Stomach Plaster.—Take of gum plaster, half a pound; camphorated oil, an ounce and a half; Cayenne pepper, one ounce. Melt the plaster and mix it with the oil; then sprinkle in the pepper, previouly reduced to fine powder.

An ounce or two of this plaster, spread upon soft leather, and applied to the region of the stomach, will be of service in flatulencies arising from hysteric and hypochondriac affections.

Warm Plaster.—Take of gum plaster, one ounce; blistering plaster, two drachms. Melt them together over a gentle fire.

This plaster is useful in the sciatica and other fixed pains of the rheumatic kind: it ought to be worn some time, and renewed twice a week.

Iron Strengthening Plaster.—Take of the common plaster, twenfour parts; pine resin, six parts; yellow wax, and olive oil, each three parts; red oxyde of iron, eight parts. Rub the red oxyde of iron with the oil; then add the other ingredients, previously melted together.

This plaster, spread on leather, is used as a common strengthening plaster in weakness of the large muscles, as of the loins.

Syrups.

Syrups are solutions of sugar in water, either pure or containing other substances dissolved. They are seldom active medicines, but are principally designed to render others more pleasant. The proportion of sugar with which they are made, generally, is about a pound to a half pint.

Simple Syrup.—Take of sugar, fifteen ounces; water, half a pint. Boil a little so as to form a syrup.

Syrup of Ginger.—Take of roots of ginger, bruised, three ounces; boiling water four pounds; double refined sugar, seven pounds and a half. Macerate the ginger in the water for twenty-four hours, in a close vessel; then to the strained liquor, add the sugar in powder, so as to make a syrup.

This is an agreeable and moderately aromatic syrup, impregnated with the flavor and virtues of the ginger.

Aromatic Syrup of Rhubarb.—Take of rhubarb, bruised, five drachms; cloves and cinnamon, each half an ounce; nutmegs two in number; water one pint. Digest and evaporate till the liquor is reduced to half a pint; and add one pound of sugar, and half a pint of spirits: then boil a little to form a syrup.

This is an elegant carminative and laxative.

Syrup of Orange Peel.—Orange peel, six ounces; boiling water three pounds; sugar four pounds.

This is a very elegant and agreeable syrup.

Syrup of White Poppies.—Take poppy heads, dried, sliced, and freed from seeds, two pounds; boiling water thirty pounds; refined sugar, four pounds. Macerate for twelve hours; then boil till one third of the liquor remains. Strain, and again boil this to the consumption of one half. Lastly, add sugar, so as to form a syrup.

This syrup is given to children in doses of two or three drachms, answering all the intentions of opiates.

Tinctures, Elixirs, &c.

Rectified spirit is the direct menstruum of the resins and essential oils of vegetables, and totally extracts these active principles from sundry substances, which yield them to water, either not at all, or only in part.

It dissolves likewise, those parts of substances in which their peculiar smells and tastes reside. Hence, the tinctures prepared with rectified spirits form an useful and elegant class of medicines, possessing many of the most essential virtues of simples, without being clogged with their inert or useless parts.

Water, however, being the proper menstruum of the gummy,

saline, and saccharine parts of medicinal substances, it will be necessary in the preparation of several tinctures to make use of a weak spirit, or alcohol diluted with water.

Aromatic Tincture.—Infuse two ounces of pimenta, or all-spice, in two pints of brandy, without heat for a few days.

This simple tincture will answer sufficiently well all the intentions of the more costly preparations of this kind.

Tincture of Kino.—Digest two ounces of gum kino in a pint and a half of brandy, for eight days; afterwards strain it for use.

This tincture is a good astringent medicine. With this view half an ounce, or more, of it may be taken three or four times a day.

Laudanum or Tincture of Opium.—Take of opium, two ounces; spiritous aromatic water, and mountain wine, of each ten ounces, dissolve the opium in the wine with a gentle heat, frequently stirring it; afterwards add the spirit and strain off the tincture.

As twenty-five drops of this tincture contain about a grain of opium, the common dose may be from twenty to thirty drops.

Hiera Picra.—Take of socotorine aloes in powder, one ounce; Virginian snake root and ginger, each two drachms. Infuse in a pint of mountain wine, and half a pint of brandy, for a week, frequently shaking the bottle.

This is a safe and useful purge for persons of a languid and phlegmatic habit: but it is thought to have better effects, taken in small doses as a laxative. The dose as a purge is from one to two ounces.

A Tonic Tincture.—Mix two ounces of the compound tincture of bark (consisting of bark, orange peel and cinnamon,) with the like quantity of the volatile tincture of valerian; and of this mixture, a tea spoonful in a glass of wine or water is to be taken three or four times a day.

This has been used with great advantage for the relief of those peculiar affections of the bowels which generally accompany nervous diseases, such as indigestion, &c.

Tincture of Cantharides.—Take of cantharides, bruised, one drachm; diluted alcohol, one pound. Digest seven days, and filtrate through paper.

This tincture contains the active principle of the fly. It is applied externally as a stimulant and rubefacient, and is sometimes given internally, in doses of from ten to twenty drops as a diuretic. It has frequently cured the diabetes.

Tincture of Aloes and Myrrh.—Take myrrh, two ounces; alcohol a pound and a half; water, half a pound: digest four days; and lastly add, socotorine aloes, and saffron, each two ounces: digest again for three days, and pour off the tincture.

This may be considered as being the *Elixir Proprictatus* of Par-

acelsus. It has long been in repute as a warm stimulant and aperient It strengthens the stomach and other viscera, cleanses the first passages from tenacious phlegm, and promotes the natural secretions in general. Its continued use has frequently done much service in cachectic cases, jaundice, uterine obstructions, and other similar disorders. Dose, from one to two drachms twice a day.

Stomachic Elixir.—Take of gentian root, two ounces; orange peel, one ounce; Virginian snake root, half an ounce. Bruise and infuse for three or four days, in two pints of French brandy.

This is an excellent stomachic bitter. In flatulencies, indigestion, want of appetite, and such like complaints, a small glass of it may be taken twice a day.

Paregoric Elixir.—Take of flowers of benzoin, half an ounce; opium, two drachms. Infuse in one pound of volatile aromatic spirit, for four or five days, frequently shaking the bottle.

This is an agreeable and safe way of administering opium. It eases pain, allays tickling coughs, relieves difficult breathing, and is useful in many disorders of children, particularly the whooping cough. Dose, to an adult, from fifty to an hundred drops.

Tincture of Foxglove.—Take dried leaves of foxglove, one ounce; diluted alcohol eight ounces. Digest. Dose ten drops, gradually increased.

Tincture of Columbo.—Two ounces and a half of the root, powdered, to two pounds and a half of diluted alcohol. Dose three or four drachms.

Tincture of Assafœtida.—Assafœtida, four ounces; alcohol, two pounds and a half. Dose from ten to fifty or sixty drops, in hysteria.

Compound Tincture of Castor.—Take Russian castor, an ounce; gum assafœtida, half an ounce; ammoniated alcohol, one pound. Digest, and filtrate.

This is a medicine of real efficacy in hysterical disorders. The dose is from half a drachm to one drachm.

Acid Elixir of Vitriol.—Take of the aromatic tincture, one pint; oil of vitriol, three ounces. Mix them gradually.

This is one of the best medicines for hysteric and hypochondriac patients, afflicted with flatulencies arising from relaxation or debility of the stomach and intestines; it will succeed when the most celebrated stomachic bitters have no effect. The dose is from ten to forty drops, in a glass of wine or water, or a cup of any bitter infusion, twice or thrice a day.

Another.—Take of alcohol, two pounds; sulphuric acid, six ounces. Drop the acid gradually into the alcohol. Digest the mixture with a very gentle heat in a close vessel, for three days, and then add, cinnamon bark, an ounce and a half; ginger, one ounce. Digest again for six days, and then filtrate.

This is a valuable preparation of elixir vitriol. It may be given in doses of ten to thirty drops, or more, three times a day.

Tincture of Black Hellebore.—Take root of black hellebore, four ounces; cochineal in powder, half a drachm; spirits, two pounds and a half. Digest seven days.

This is an excellent preparation of hellebore when designed for an alterative. It has also been found by experience to be particularly serviceable in uterine obstructions. In sanguine constitutions where chalybeates are hurtful, it is said that it seldom fails of exciting the menstrual evacuations, and removing the ill consequences of their suppression. A tea spoonful of the tincture may be taken twice a day in warm water.

Essence of Peppermint.—Take oil of peppermint, one ounce; alcohol, a pound and a half. Digest till the oil is blended with the alcohol.

Essence of Spearmint—Is made in the same manner with half the quantity of the oil.

Compound Tincture of Lavender.—Take of oil of lavender, six ounces; oil of rosemary, two ounces; cinnamon, one ounce; cloves, two drachms; nutmeg, half an ounce; red sanders, in shavings, three drachms; alcohol four pounds. Digest ten days and filter.

This is a grateful cordial in common use, as relieving languor and faintness. From ten to an hundred drops may be conveniently taken dropped on sugar.

Medicated Wines.

Chalybeate Wine.—Take of purified filings of iron, or rust of iron, one ounce; white wine, sixteen ounces. Digest for a month, often shaking the vessel, and then filtrate.

The dose is from a drachm to half an ounce, twice or thrice a day in menstrual obstructions and green sickness.

Compound Wine of Gentian.—Take of gentian, half an ounce; Peruvian bark, one ounce; orange peel two drachms; canella, one drachm; diluted alcohol, four fluid ounces; wine two pints and a half. First pour the diluted alcohol on the root and barks, sliced and bruised, and after twenty-four hours, add the wine; then macerate for ten days, and strain.

Wine is fully capable of extracting the active powers of the different ingredients; and it supplies us with a very useful and elegant stomachic medicine. Its dose is six drachms.

Wine of Opium—(Commonly called "Sydenham's Laudanum.") Take of opium two ounces; cinnamon and cloves, each one drachm; wine, one pint. Macerate for ten days and strain.

Dose, from ten drops to forty, fifty, or more.

Antimonial Wine.—Take glass of antimony, reduced to a fine powder, half an ounce; Lisbon wine eight ounces. Digest without heat for three or four days, shaking it occasionally. Then filter.

The dose varies according to the intention, as an alterative and diaphoretic, it may be taken from ten to fifty or sixty drops. In a large dose, it generally proves cathartic, or excites vomiting.

Wheys.

Alum Whey.—Boil two drachms of powdered allum in a pint of milk, till it is curdled; then strain out the whey.

This whey is beneficial in immoderate flow of the mences, and in diabetes. The dose is too, three, or four ounces, according as the stomach will bear it, three times a day.

Mustard Whey.—Take milk and water, each a pint; bruised mustard seed, an ounce and a half. Boil together till the curd is perfectly separated. Strain out the whey.

This is by no means the least efficacious way of exhibiting mustard. It warms and invigorates the habit, and promotes the different secretions. Hence, in the low state of nervous fevers, it will often supply the place of wine. It is also of use in the chronic rheumatism, palsy, dropsy, &c. The addition of a little sugar will render it more agreeable. Dose a tea cupful four or five times a day.

MISCELLANEOUS

AND

PATENT COMPOUNDS.

Godfrey's Cordial.—Take opium, eight grains; molasses, eight ounces; alcohol, four ounces; oil sassafras, three drops; distilled water, one pint. Digest three days. Dose two drachms to an infant.

This medicine is much used as an anodyne for infant children.

British Oil.—Take sulphurated oil, one ounce; oil of petroleum, or rock oil, half an ounce; purified oil of amber, two drachms; oil of turpentine, four ounces. Mix. Dose, from fifteen to twenty drops morning and evening.

Harlæm Oil.—Take sublimed sulphur, two ounces; linseed oil, one pound; oil of amber, two ounces; oil of turpentine, a sufficient quantity. Boil the sulphur in the linseed oil until it is dissolved; then add the oil of amber, and as much of the spirits of turpentine, as shall make it of a proper consistence.

Dover's Powder.—Take of the root of ipecac pulverized, and opium, each one part; sulphate of potash, eight parts. Triturate them together into a fine powder. The medium dose is fifteen grains. It is celebrated as a sudorific, and extensively used.

Steer's Opodeldoc. (The hard kind.)—Take best Windsor soap, two and a half pounds; oil of rosemary, five drachms; oil of thyme, five drachms; camphor, seven and a half ounces; water of ammonia, one and a half pounds; water, a pound and a quarter; alcohol eleven pints. Dissolve the soap and camphor in the alcohol, with a gentle heat, and when dissolved, add the water of ammonia, and water; and when cooling, the oils. The bottles must be filled while lukewarm, and not sealed up until the opodeldoc is perfectly congealed.

Bard's Opodeldoc.—Take Venetian soap, two ounces; camphor gum, one ounce; brandy, one pint. The soap is dissolved in the brandy, by a gentle heat, and after its solution the camphor is to be added.

Canada Liniment.—Take water of ammonia, olive oil, oil of turpentine, oil of peppermint, and alcohol, each one ounce. Mix.

Used for chronic rheumatism. It is one of the neatest and most efficient liniments with which we are acquainted.

Lee's Pills.—Take of gum gamboge, one ounce; aloes half an ounce; scammory half a drachm; Venetian soap, two drachms; nitrate of potash one drachm; tincture of aloes with myrrh, a sufficient quantity to make into a mass for pills.

Anderson's Pills—Socotorine aloes, one ounce; gum gamboge one drachm; extract of butternut bark, two drachms; sulphate of iron, one drachm; alcohol sufficient quantity. Mix. Dose from two to four.

Hooper's Pills.—Aloes, one ounce; myrrh, half an ounce; carbonate of iron, and calcined sulphate of iron, each three drachms; cloves, pulverized, half a drachm; alcohol, quantum suf. Make into pills of common size. Dose from three to four.

Sulphuric Liniment.—Sulphuric acid, three drachms; oil turpentine, four ounces; sweet oil, ten ounces. Mix.

Used for itch.

English Itch Ointment.—Take sulphur, two ounces; white hellebore, pulv. and impure carbonate of potash, each two drachms; oil of lemon, twenty drops; lard, two ounces. Make into an ointment.

Cajeput Opodeldoc.—Take of almond soap, two ounces; alcohol, one pint; camphor, one ounce; cajeput oil, two ounces: First dissolve the soap and camphor in the alcohol, and when the solution is about to congeal, add the oil of cajeput. Shake them well together, and put into bottles to congeal.

This composition is a great improvement on the Opodeldocs in general use; and in cases of rheumatism, paralytic numbness, chilblains, enlargement of the joints, and indolent tumors, where the object is to rouse the action of the absorbent vessels, and to stimulate the nerves, it is a very valuable external remedy.

Sneezing Powders. Take of dried leaves of asarabacca, one ounce; lavender flowers and marjoram leaves, dried, each two drachms. Rub them together to a powder, which keep in a well stopped vial.

A few grains of this powder snuffed up the nose, excite sneezing and a copious discharge of mucus.

Huxham's Tincture of Bark.—Take of Peruvian bark, two ounces; orange peel, an ounce and a half; Virginia snake root, three drachms; saffron, one drachm; cochineal, two scruples; proof spirit, twenty ounces. Digest fourteen days and strain.

As a corroborant and stomachic it is given in doses of two or three drachms: but when employed in fevers it must be given in large quantities.

Chalk Mixture.—Take of prepared chalk, one ounce; refined sugar half an ounce; mucilage of gum arabic, two ounces. Rub them together, and add, by degrees, two pints of water, and two ounces of spirituous cinnamon water.

This is a very elegant form of exhibiting chalk, and is an useful remedy in diseases arising from, or accompanied with acidity of the stomach; and particularly in diarrhœa and dysentery. It may be taken to the extent of a pint in the course of a day.

The Black Drop.—Take opium, half a pound; vinegar three pints; nutmeg; an ounce and a half; saffron, half an ounce; boil to a proper consistence, and add, four ounces of sugar, and one fluid ounce of yeast. Digest seven weeks: then place it in the open air till it becomes a syrup. Decânt, filter and bottle it up, adding a little sugar.

Dose from five to ten drops.

Gout Cordial.—Take cardamon seeds, and caraway seeds, bruised, each two ounces; the best meadow saffron, half an ounce; Turkey rhubarb, an ounce and a half; Gentian root three fourths of an ounce. Mix and infuse in a quart of *white* brandy, for a fortnight. Dose a table spoonful, with an equal quantity of water, to be taken every third day.

DOMESTIC PHARMACOPŒIA.

The list of medicinal preparations which follow, comprises, with a single exception, all my favorite *compound* remedies; together with many gathered in the course of a long life, or selected from the successful practice of other physicians. None of these are infallible in all cases, although many of them, properly employed, will, I venture to say, fulfil all reasonable expectations that can be entertained from medicine. But good medicine will frequently disappoint expectation; when this happens, however, before we discard or blame the means, let us satisfy ourselves that they have not been misapplied; for more depends upon a *correct application*, than upon the specific virtues of any remedy; and sagacity and skill to direct, constitute the great secret of success in practice.

Many of the recipes here given may be considered of little consequence, or even frivolous. Some of them, perhaps, are so, individually. But to the discerning practioner, all of them will afford VALUABLE HINTS, which he may improve with advantage, With this view, alone, they are here published.

FAVORITE PREPARATIONS.

The Tonic Tincture—32 gallons.—In thirty-two gallons of good sound cider, infuse five pounds of the inner bark of white oak, pulverised; eight pounds of horseradish root, bruised; and three pounds of Seneca snake root, bruised. Cover it, and let it stand in a warm place, or over a gentle heat (not exceeding blood heat) for six days. Then strain the liquor off into a clean cask, and add three pounds of the carbonate, or rust of iron; and two ounces of oil of cloves, decomposed in alcohol.

Let this now stand for two or three weeks, shaking it up occasionally, and not entirely excluding the air; when it will be sufficiently prepared to draw off into bottles, or it may remain in the cask.

To every bottle of this tincture, add half an ounce of "Turlington's balsam of life." Shake them together till they are incorporated, when the composition is ready for use.

Dose, from one-third to two-thirds of a common wine glassful, three times a day, before meals.

In all cases of debility, and weakness of blood, in consumptions, dropsy, long continued agues, obstructed menses, &c. this tonic tincture will be found an invaluable medicine.

The Mother's Cordial—1 gallon.—Take one pound of the partridge berry vine, or squaw vine, dried; and one fourth of a pound of high cranberry, or cramp bark; boil in two gallons of water to three

quarts; strain, and add one quart of brandy, and one pound of sugar.

Dose, in the latter stages of pregnancy, half a wine glassful every night on going to bed, in a little warm water. The dose may be increased to a gill, if necessary, to relieve cramps and pain.

This is an inestimable cordial for pregnant women, and should be used in all cases, for at least one or two weeks previous to confinement, as a preparatory.

The Female Strengthening Syrup.—Take one fourth of a pound of comfrey root, dried; two ounces of elecampane root; and one ounce of hoarhound. Boil from three quarts to three pints; strain, and add, while warm, half an ounce of beth root, pulverized; a pint of brandy, and a pound of loaf sugar.

Dose, from half to two-thirds of a wine glassful, three or four times a day.

This is used in female weaknesses, bearing down of the womb, fluor albus, debility and relaxation of the genital organs, barrenness, &c.

The Anti-mercurial Syrup.—This medicinal preparation, taken in proper doses, operates as an alterative and detergent; a diaphorectic, diuretic and laxative; an anti-spasmodic and anodyne; and, in proper cases, as a stomachic and emmenagogue. Generally expressed, it increases all the secretions and excretions, and excites action in the glands in a particular manner. From these principles its effects may be deduced.

The diseases to which it is applicable are pointed out in the course of this work.

The dose must vary greatly in different persons, some being able to bear less than a sixth part of the quantity that others can. Those persons especially whose blood is weak and watery, require a very small proportionate dose. The average dose for a healthy adult, is half a common wine glassful, (about two-thirds of an ounce,) increasing it to two-thirds of a wine glassful, according to its effects. It should be taken three times a day, fasting, or about half an hour before meals. An over dose will produce considerable dryness in the fauces, and a temporary dimness of the sight, which will be perceived on attempting to read. A slight dimness is of no consequence, and only serves to shew the proper effect of the medicine; but more than this would not be advisable. The proper dose produces no inconvenient effects, or unpleasant feelings. Under its operation, no restriction in diet is required, or abstinence from the common business avocations; ardent spirits, however, must be abstained from. The pores being opened rather more freely, the liability to taking cold is somewhat increased; but it produces no deleterious effects, and is only injurious from its retarding the cure. This invaluable preparation has, in my practice, saved many lives that were deemed past all hope.

The Anodyne Wash—4 gallons.—Take fifteen pounds of blood beets, sliced: boil to two gallons, and strain. Then add, while warm, one pound and a half of sal ammoniac; and half a pound of

opium. Stir it occasionally, till they are dissolved; when the whole may be strained; and add to it two gallons of proof spirits.

A little spirits of lavender may be added to give it a flavor.

This will be found a valuable cooling and anodyne application in all cases of inflammation, bruises, pain, &c.

The Children's Cordial.—Take two ounces each of pink blows, smellage root, and pleurisy root; boil to one quart; strain, and add one quart of fourth proof brandy, and one pound of sugar.

Dose, for an infant, a tea spoonful, repeating if necessary.

For the colics, fits, green stools, &c. of children, this is an excellent remedy.

Chalk Julep.—Take of prepared chalk, four ounces; rhubarb, one ounce; pour upon them one quart of hot water. Then add half an ounce each of essence of peppermint and paregoric. Let it steep a short time, and after it has settled, decant it off, and bottle it up.

Dose, for an adult, from one to two table spoonsful.

In dysentery and diarrhœa, proceeding from acidity in the first passages, this will be found of superior efficacy.

Clove Jelly.—Take two pounds of best English glue, or (which is preferable) an equal quantity of calves' feet jelly: dissolve it in two quarts of water; and add three pounds of refined sugar, half an ounce of oil of cloves, and an ounce of "balsam of life." Incorporate them well together, and let it cool, when it becomes a jelly.

Dose, a piece the size of a hickory nut, four or five times a day.

This may be taken with advantage in cases of a weak stomach, general debility, gleets, seminal weakness, &c.

Sal Aeratus and Rhubarb Mixture.—Take three parts of sal æratus, and one of rhubarb, finely pulverized. Mix.

A tea spoonful taken daily, dissolved in a tumbler of cold water and sipped up in the course of the day, is inferior to no other preparation in relieving acidity in the stomach.

Stramonium Tincture, or Green Drops.—Take one quart of stramonium seeds, pulverized: boil in four quarts of water to two quarts; strain, and add two quarts of spirits.

Dose, from ten to twenty-five drops, two or three times a day.

For Costiveness.—Take two ounces of rhubarb; and one ounce of rust of iron; infuse in one quart of wine.

Dose, half a wine glass every morning.

Conserve for a cough.—Take three parts of fresh comfrey root, and one part of green Indian turnip; bruise together into a fine paste, and add two parts of refined sugar. Mix.

A table spoonful of this may be eaten three or four times a day, for coughs, &c.

Worm Syrup.—Take one ounce of aloes; half an ounce of assa-

fœtida; and four ounces of snakehead, dried: boil the snakehead to one quart, and add the aloes and assafoetida, and a quart of molasses.

Dose, for a child, a tea spoonful every half hour, till it operates as physic; which will bring away the worms in a slimy mass.

Healing Wash.—Boil half a pound of witch hazle bark to a decoction of a quart; and add three or four ounces of "Turlington's balsam of life," and (at pleasure) a drachm of white vitriol. Shake them well together.

For cleansing and healing excoriated surfaces, and correcting acrimony and putridity, this is second to none. It is particularly serviceable as an injection in gonorrhœa, and as a wash for venereal ulcers.

The Green Salve.—To three pounds of lard, add a quarter of a pound of beeswax; two ounces of verdigris, finely pulverized; and one pound of Scotch snuff. Melt, and stir till cold.

This is a most excellent salve for cleansing and bringing life and action into foul and ugly ulcers. I find great use for it.

The Bittersweet Ointment.—Take equal parts of plantain leaves and root, bittersweet bark, and spikenard root, boil out the strength, strain, and make it into an ointment with hogs lard.

This is a valuable ointment, and is frequently recommended in this work. It softens and relieves a caked and inflamed breast in a remarkable manner, and may be applied with advantage.

Iron and Myrrh Pills.—Take rust of iron, three parts, and myrrh, pulverized, one part. Make into a mass with Castile soap and molasses.

Dose, two or three, twice a day. They are used for the same purposes as the tonic tincture.

Fir Pills.—Take balsam of fir, and mix in enough of foxglove, pulverized to make it of a proper consistence for pills.

Dose, three or four, twice a day. These pills will often cure a gleet, and are generally useful in completing the cure of gonorrhœa.

For Epileptic Fits of the Nervous kind.—Take one ounce each, of gum myrrh and flowers of sulphur; half a gill of spirits of turpentine; and one gill of oil of almonds, or of sweet oil. Simmer all together two or the hours, until it becomes red. Then drain the liquid off from the sediment, and bottle it up.

Dose from fifteen to thirty drops twice in twenty-four hours, for an adult, and in proportion to children.

Miscellaneous Preparations.

Asthmatic Tincture.—Take half a pound of quick lime, slack it by turning on two quarts of hot water, and while it is slacking and boiling, stir in two spoonsful of tar; mix them well together, and

then let it settle. Take half a pound of wild turnip, half a pound of milk weed roots, fresh, a small handful of lobelia ; bruise and infuse them in two quarts of wine, in a sand heat, for twenty four hours ; then press and strain, and add to it the lime water, and bottle it for use.

Dose, a wine glass three times a day.

This is useful in coughs, asthmas, consumptions, hysterics, spasms, &c.

Dr. Hull's Genuine Bilious Physic.—Take eight ounces of aloes ; one ounce each of mace, myrrh, cinnamon, cloves, saffron, and ginger ; four ounces of the dried leaves of the garden sunflower, or of the wild sunflower. Pulverize the articles separately, and mix them thoroughly. Dose, a tea spoonful.

The efficacy of this celebrated physic in the cure of bilious colic, is well known. This is the first genuine recipe of it ever published. Several spurious ones have been circulated, but in them the two active articles, saffron and sunflower, were omitted.

Dr. Young's Deobstruent Pill —Take aloes, in fine powder, two ounces ; Castile soap and the best of flake manna, of each one ounce ; oil of aniseed a sufficient quantity ro reduce it into a mass for pills. Make twelve pills out of each drachm ; one of which may be taken at any time of the day, occasionally as a laxative, to resolve and carry off foul viscid matter from the bowels, thereby obviating costiveness, and preventing the numerous evils incident to it. They produce the most salutary effects in cases in which the bile is inert. Their operation is remarkably gentle.

Detergent Syrup.—Take equal parts of bittersweet bark ; burdock roots ; dandelion tops and roots ; sumach, bark of the root ; tag alder, the bark and tags ; sassafras, the bark. Boil all together to a syrup, strain and sweeten, and add spirits enough to preserve it from fermentation.

Dose, according to its effects, two or three times a day. It cleanses and purifies the blood from humors, and causes a free circulation.

Strengthening Syrup.—Take balm of gilead buds, black cherry bark, black alder bark, or berries, colombo root, dogwood bark, unicorn root, and whitewood bark ; prepare in the same manner as the above, and take as the stomach will bear.

This is an excellent stomachic, and stengthens the system generally.

Expectorant Pills—Take of blood root, mandrake and Indian hemp, each one ounce ; lobelia, the seeds and leaves, a quarter of an ounce ; Indian turnip, one ounce ; all pulverized fine ; opium, half an ounce ; and liquorice extract, half an ounce : all to be formed into a mass for pills, with the mucilage of flaxseed, or slippery elm and honey, or molasses, and made into common sized pills.

Dose, one pill once in six hours, for coughs, colds, consumptions, &c.

Vegetable Bilious Pills.—Take mandrake, eight ounces; blood root, four ounces; lobelia leaves and seeds, four ounces; gamboge, eight ounces; all finely pulverized; one fourth of an ounce of the oil of peppermint, or aniseed, and as much molasses as will form into a mass for pills. Dose, from two to six pills.

Anodyne Sudorific Pills.—Take opium, one ounce; ipecac, one ounce; pleurisy root, one ounce; Indian turnip, one ounce; camphor gum, half an ounce; all to be pulverized fine, and formed into a mass with the mucilage of gum arabic, and made into common sized pills. One pill may be taken every four or five hours.

They ease pain, and create a moderate perspiration; and are good in all cases where anodynes and sudorifics are proper.

Emetic Powders.—Lobelia, the leaves and seeds; Indian hemp, the roots, each two ounces; blood root, half an ounce; and anise, caraway, or fennel seeds, or angelica or calamus root added: all pulverized, and mixed. One tea spoonful to be put into a cup of warm water, or gruel, and sweetened, to be taken at a dose. It may be repeated until it operates.

For a quick Bilious Purge.—Take sixteen parts each of gamboge and mandrake; eight parts each of blood root and lobelia seeds, pulverized; and one part of oil of lobelia. Mix well with mucilage of gum arabic, for pills. Dose, for a purge, from three to four; for a purge and emetic, from five to six.

Cathartic Powders.—Take mandrake root, and blue violet, each two parts; blood root, one part; all to be mixed. Dose, half a tea spoonful two or three times a day.

They remove costiveness, indigestion, and correct the stomach and bowels.

Stimulating Cathartic Powders.—Add to the above mentioned composition, one part of golden seal, or colombo; and one fourth part of Cayenne pepper. Exhibited in the same manner as the above, only in rather larger doses.

Tonic Powders.—Take equal parts of golden seal, colombo root, and rust of iron, all finely pulverized. Mix. Dose, from five to twelve grains three times a day.

This is a powerful tonic in cases of debility.

Sudorific Powders.—Take pleurisy root, and Indian turnip, each two ounces; blood root, one ounce; pulverize and mix.

Dose, half a tea spoonful once an hour; to be given in fevers, after the stomach and bowels are cleansed.

Bone's Bitters—1 quart.—Take unicorn root, one ounce; blood root, one fourth of an ounce; ginseng, half an ounce; tamarisk bark, one ounce; nanny bush bark, one ounce; devil's bit, half an ounce; rue, one fourth of an ounce; seneca snake root, sassafras bark, and

golden seal, each one fourth of an ounce. Digest in one quart of best Jamaica spirits, in a sand heat, for twenty-four hours; then strain. Dose, a tea spoonful three times a day, in water.

This bitter is celebrated for its fine restorative and strengthening qualities, in indigestion, rheumatism, dropsy, pain in the breast, &c.

For Epilepsy, and Nervous Fits.—Take one ounce of gum myrrh, pulverized; one ounce of flowers of sulphur; half a gill of spirits of turpentine; and a gill of oil of almonds, or of sweet oil. Simmer together two or three hours, until it becomes red. Then drain it off from the sediment, and bottle it up. Dose, from fifteen to thirty drops, twice in twenty-four hours, for an adult.

To relieve Cough.—Take an ounce and a half of liquorice root; one ounce of elecampane; half an ounce of hoarhound; two ounces of sulphur. Pulverize them, and add honey to make a conserve.

Snuff for Catarrh in the Head.—Take colt's foot, snakeroot or asarabacca, and bayberry bark, each two parts; and blood root, one half part; pulverize fine, and mix. If the wandering milkweed be added to this, it cures headach.

Colic Powders.—Take two table spoonsful of pleurisy root, and a tea spoonful of Cayenne pepper: pulverize and mix. In colics, steep the whole in half a pint of water, sweeten, and take it at a dose. It may be repeated according to circumstances.

Or, which is better, equal parts of pleurisy root and crawley root, pulverized, mixed, and given in powder.

Aperient Mixture.—Take ginger root and saffron flowers, each one ounce; the bark of white ash roots, one handful; sweet plantain, tops and roots, a double handful; blue cohush roots, a small handful; vervain tops and roots, a double handful: all to be bruised; when they may be either made into a syrup, or infused in half a gallon of cider; or in the same quantity of spirits. This should be taken freely, as the stomach will bear.

This mixture opens the system generally; is good in obstructions of the menses, in rheumatism, and is powerful to drive diseases to the surface of the skin, such as erysipelas, or any diseases of the blood.

For Dysentery—(Dr. Perkins' last remedy, so called.) Take good vinegar, and as much salt as it will dissolve: add one table spoonful of it to four of hot water, and let it be taken by spoonsful, as fast and as hot as it can be swallowed. This dose is to be continued once in two hours till it operates as physic. It is said to be a sovereign remedy in dysentery.

Jaundice Bitters.—Take the bark of the roots of whitewood, boxwood, or dogwood, black cherry, and prickly ash, each one handful; horseradish roots and mustard seed, each two ounces; and a handful of hops; all to be infused in one gallon of cider, or of equal parts of wine and water. Dose, half a wine glassful, three times a day.

Ague Bitters.—In one quart of wine, infuse one table spoonful of blood root ;two of wild turnip ; and two tea spoonsful of mandrake, all pulverized fine. Dose, a table spoonful as often as the stomach will bear it.

Stoughton's Bitters.—Take orange peel, one pound ; gentian root, three pounds ; camwood, two pounds ; pulverize and infuse them in six gallons of spirits ; and after shaking it well for five or six days, decant, and bottle it up for use.

Female Bitters.—Take of crane's bill, four ounces ; comfrey, four ounces ; beth root, four ounces ; motherwort roots, four ounces ; whitewood bark, four ounces ; orange peel, one ounce ; cinnamon, half an ounce ; all bruised, and infused in three quarts of good wine, and sweetened.

This is very useful in all cases of female debility, fluor albus, and immoderate flow of the menses, &c.

Anodyne Carminative Drops.—Take angelica, or motherwort roots, four ounces ; valerian, two ounces ; calamus, half an ounce, anise, dill, and fennel seed, one ounce each, or two ounces of either ; catnip, blows or leaves, and motherwort, each a large handful ; pleurisy root, four ounces. Infuse the whole in two quarts of brandy, or good common spirits ; and digest in a moderate heat for twenty-four hours. Then press out and strain the liquid, and add to it half a pound of loaf sugar. When settled, bottle it for use.

Dose, for children, from ten to sixty drops, according to the age : for adults, from one to four tea spoonsful, in a cup of warm tea. It may be repeated once in four, or six hours. It eases pain, creates a moderate perspiration, and produces refreshing sleep ; is good for restless children, removes flatulency, and wind colic : and is useful in hysteric and nervous affections, female debility, &c.

Bathing Drops.—To one quart of alcohol, add one ounce of hemlock oil ; one ounce of gum guaiacum, pulverized ; one ounce of gum myrrh ; two tea spoonsful of Cayenne or red pepper. Shake them well together, and bottle for use.

For rheumatic pains, or pain in the head, stomach, or elsewhere, bathe the parts every night and morning. They may be taken internally at the same time, in water or on sugar, in doses from ten to sixty drops.

Cough Drops.—Take saffron flowers, one ounce ; blood root, half an ounce ; liquorice root, one ounce ; elecampane and wild turnip, each one ounce ; the bark of sumach root, two ounces. Digest the whole in three pints of spirits, kept warm, for forty-eight hours ; then press, strain, and let it settle.

Then add to it a tea cupful of the juice of roasted onions, one quart of lime water, one pint of tar water, and a pint of molasses, and bottle it for use.

Dose, from one fourth to a wine glassful three times a day. This is excellent in coughs, consumptions, &c.

Another.—Take sweet oil, one pint; raw flaxseed oil, half a pint; molasses, or honey, half a pint; spirits of turpentine and balsam of fir, each an ounce; liquorice extract, half an ounce: simmer the whole until mixed. Dose, from ten to sixty drops, twice or thrice a day, for colds, coughs, and consumptions.

Rheumatic Drops.—Take one table spoonful of pulverized mandrake root; one table spoonful of black cohush; and a large handful of pipsissawa, or prince's pine. Infuse themin one quart of wine. Dose, from one to four tea spoonsful three or four times a day. Useful in chronic rheumatism, gout, &c.

Anti-spasmodic Tincture.—Take the leaves of stramonium and lobelia, of each two ounces; pleurisy root, two ounces; valerian, masterwort, angelica, castor, and opium, each one ounce; all broken and put into an earthen vessel, with two quarts of alcohol and half a pint of the juice of roasted onions; to which add one fourth of an ounce of Cayenne pepper.—Keep in sand heat for thirty six hours; then press, strain, and bottle up for use. Dose, from thirty to sixty drops; it may be taken in hot water, and sweetened, or on sugar.

In case of cramps or spasms, the dose must be repeated every fifteen minutes until it gives relief; or, in whooping cough, from ten to thirty drops once in half an hour until it nauseates or vomits. In croup it is to be taken in the same way. In asthma, give from forty to sixty drops, and repeat until it gives relief; also in lockjaw. Persons who are subject to cramp and convulsive fits, may take thirty drops, three times a day, and increase the dose one drop every day. It is a quite certain remedy in all spasmodic diseases.

For Dropsy.—Take gentian roots, four ounces; elecampane, eight ounces; sassafras, bark of the root, one pound; sarsaparilla, two pounds. Boil the whole in two gallons of water, till one half is evaporated. Dose, a wine glassful four or five times a day.

Tar Syrup.—Take one gill of tar, one pint of wheat bran, half a pound of loaf sugar, and two quarts of water; stir them well together, and then let it stand thirty six hours; strain off, and add one quart of lime water. Dose, a wine glassful three times a day. This is an excellent remedy for coughs, consumptions, &c.

Common Gargle.—Take the flowers of life everlasting, or Indian posey; sage, and golden seal, or gold thread; make a tea, and sweeten with honey. Very useful for a sore mouth, sore throat, &c.

Or, chew the blossoms of Indian posey, and swallow the juice, which will be found of great benefit in quinsy, sore throat, &c.

Gargle for Canker in the Stomach.—Make a strong tea of bloodroot, and take equal parts of the tea and honey, and simmer them together. Give the patient little, and often, as the stomach will bear.

A Wash to remove Freckles and Tan from the Face.—Take an ounce of gum benzoin, pulverized, and boil it two minutes in a gill

of alcohol; then pour it into a quart of cold water, when it becomes of a milky color.

Wash the face in rain water, without soap, and then rub the face with this wash two or three times a day, with a towel.

To remove Films.—Take equal parts of saltpetre, loaf sugar, and rock salt; and one fourth as much alum: all pulverized as fine as possible, and mixed with honey. Reduce in rain water.

REMEDIES APPLICABLE TO PARTICULAR DISEASES.

The remedies which follow, let it be understood, are not here mentioned with the view of superceding, or in any wise interfering with the general plan of treatment already recommended in the various diseases described in this work. They are inserted merely as *accidental cures*; but from which, perchance, the sagacious physician may derive profitable information.

Intermitting Fever, or Ague.

Take a pint of strong coffee, the juice of a lemon, and a gill of brandy. Mix, and drink, as the fit is coming on. This has often succeeded in breaking and curing the ague, in the worst cases.

Infuse dogwood blows, blood root, (a little,) coltsfoot, and spikenard, in spirits. Take a wine glassful of this three or four times a day.

Make a continued drink of sage, saffron, and camphor, in tea, with sweet milk and vinegar enough to turn it.

For a draught for the feet, pond lilly, or poke roots.

Take the juice of four lemons, and pour on a pint of boiling water. Give a spoonful every ten minutes. It will break the fit.

Peach pits and the inner bark of black alder: infuse in good spirits. Take it fasting, and often in the day.

Take one nutmeg, and the same weight of alum, finely pulverized. Mix, and divide into three portions, one to be taken each morning, for three days. This is a German remedy, and is said to be infallible in breaking the fits.

Take a drachm of sulphur mixed with molasses, for three mornings in succession. If not cured, after three days try it again.

Barberry root and camomile, in brandy.

Boil one pound of oats, and a large handful of succory, in six quarts to three; and add half an ounce of nitre, and half a pound of sugar. Dose, two gills a day.

This liquor, (which should be kept close,) is used in all fevers, pleurisies, colics, and obstructions. It is highly extolled as a preservative in an unhealthy season, and is said to prolong life, when taken for a time in the spring, dog days, and autumn.

Five finger leaf tea is excellent in night sweats and debility arising from agues.

Dandelion and sorrel, in decoction, is said to break the worst fevers.

A handful of *fish worms* in a pint of spirits. Dose, a small glassful as the fit comes on. This is powerful in quelling the paroxysm; but tonics are necessary to complete the cure.

To prevent the ague, take ten or twelve grains of black pepper daily. Persons in exposed situations would profit by attention to this.

For Inflammatory, Putrid and other Fevers.

For Yellow Fever.—Take plantain juice, a wine glassful every ten minutes till the fever intermits, which usually takes place in two or three hours. Keep the patient in a free air, and let him drink camomile tea, or water without limit. On the intermission of the fever, give a smart purge.

To create a sweat in spotted and similar fevers, take potatoes, fresh out of the earth, without washing; roast or boil them, till they can be mashed, and apply them in bags hot to the feet and sides. Vinegar may be added.

In all putrid and epidemic disorders, buttermilk, either fresh or boiled, taken freely, will be found inferior to no other means of cure.

For an antiseptic in putrid fevers, when the circulation is rapid, and the heat of the body greatly increased, draw a strong infusion of good ground malt in boiling water, strain it off, and add to a pint of it while milkwarm, two table spoonsful of the best yeast, and a table spoonful of Muscovado sugar; keep it warm and when it is in brisk fermentation, give the patient a wine glassful every hour, or if the symptoms are urgent, every half hour. This has frequently saved, in the last extremity.

The same infusion may be used for injection.

For the plague, and malignant and infectious fevers, the free internal and external use of sweet, or olive, oil, is productive of the happiest effects. As a substitute, the following mixture may be employ-

ed: dissolve two drachms of camphor in an ounce of sulphuric ether, and beat it into a bottle of olive oil. Two table spoonsful of this mixture may be taken every half hour, accompanied by softening and mucilaginous drinks in abundance, and also by clysters of the same nature.

For Quinsy.

To prevent its coming on, take a tea spoonful of salt in the mouth, and as it dissolves, gargle the throat with it. Repeat this till the quinsy is dispersed.

Take an ounce of wild indigo root, boil, strain, and stir in meal, for a poultice to the neck, to take out inflammation. Also gargle with the indigo root decoction. Or, marsh mallows, in a decoction.

To discuss the quinsy in its first stages, apply a plaster of four ounces of hard soap, half a pound of sugar, half a pint of linseed oil, and two ounces of resin.

Take a white bellied hop toad, cut it open alive, and apply it to the throat. This is a most powerful drawing application, though rather unseemly. When other means fail, however, it may be profitable to employ this.

Thrush, or Canker Sore Mouth.

For a gargle: in a pint of strong sage tea, dissolve borax and alum, each the size of a kernel of corn, adding a little molasses.

Or, gold thread, in decoction; or blackberry root; or yarrow tea.

Take juice of celandine, honey, and a little saffron—simmer a while and take off the scum. Apply the liquor to the sores with a feather.

For a sore mouth—take the yolk of a roasted egg, burnt leather pulverized, sage and burnt alum: mix with honey for a gargle.

Make a strong decoction of white oak bark; to which add burnt oyster shells, and burnt alum, pulverized. Used in a sore mouth.

Take sage, hyssop, gold thread, borax and alum; boil all together in a half pint of water, and add molasses, for a gargle.

A decoction of the bark of the astringent elm, (not the slippery,) used freely for a gargle, is good.

For the Black Canker.—Take night shade, half an ounce of the green herb to a quart of water, steeped. Wash the mouth and throat with this, and give a tea spoonful every two hours, to an adult: children proportionably.

Take agrimony, devil's bit, and lungwort, and boil them, for a wash.

Take half a pound of squaw, or cohush root, six ounces of beech drops, and four ounces of red elm bark : boil in four quarts of rain water, to two, strain, and dissolve in the decoction two ounces of alum and half an ounce of salt petre ; to which add half a pint of honey. This will cure the most inveterate sore throat.

For Pulmonary Consumptions.

A Syrup : Take an ounce each of spikenard, cinnamon, Virginia snakeroot, and parsley ; two ounces of pleurisy root ; and half an ounce each of cloves and gum myrrh. Steep the whole three hours in two quarts of water. Then strain, simmer down to a pint, and add while warm, one pound of sugar, and a pint of port wine. Bottle it up. Dose, from half to two wine glasses, three times a day, according to the strength of the patient.

Rad vitæ, or life root, half an ounce, steeped in a quart of water, and used for common drink, is a most valuable remedy in beginning consumptions.

For night sweats, in consumption, or if the urine is frothy, give the elixir of vitriol, ten drops four or five times a day.

Small doses of wild turnip, in honey, four or five times a day, is useful.

Slippery elm bark, soaked in cold water, and sharpened with vinegar, is a good expectorant in consumptive coughs.

Or, a conserve of comfrey and wild turnip, in honey.

The fumes of burning resin and beeswax may be inhaled, repeating it three or four times a day.

Or, drink tar water.

Or, take the yolk of two eggs, a gill of wine, a tea spoonful of tar, and a table spoonful of honey, beat them together. Dose, a tea spoonful four times a day.

For a bleeding at the lungs, give moderately, a tea of sweet bugle, or of cranesbill.

A handful each of comfrey, elecampane, hyssop and lungwort : boil to two quarts, add a pound of honey, and simmer to two quarts. Dose, a table spoonful three or four times a day.

Adder's tongue, eaten as salad, with sugar, is of great benefit in scrofulous consumption.

Boil four ounces of hyssop, and one ounce each of wild cherry bark and skunk cabbage root, in four quarts of water to two ; strain,

and add a pint of honey, half a pound of sugar candy, two ounces of liquorice root pulverized, two ounces of shavings of hartshorn, one handful of rue, three ounces of aniseed, figs and raisins, each four ounces. Boil all the ingredients in one gallon of water to three quarts. Strain the decoction, and add a quart of honey and a pound of sugar. Simmer till it incorporates; then put in a cool cellar for use. Dose, a gill every morning, and at bed time, fasting.

Dogs' grease, clarified, and a spoonful taken daily, has cured a far gone consumption.

For Coughs, Colds, &c.

A large draught of boneset tea, on going to bed. A little peppermint may be added, to prevent nausea.

Or Indian turnip, a tea spoonful at a dose, and repeated two or three times, before going to bed.

Or, buttermilk whey, hot, and sweetened with molasses.

Or, brook lime, in decoction. This may be depended on for certain relief.

If the cough is severe, and continues, slippery elm, or flaxseed tea may be given, sharpened with vinegar. If it should not yield to this, let the bowels be kept open, and give horseradish, scraped, in vinegar, and sweetened with honey.

Or, a syrup of common turnips, sliced and baked in molasses, or honey, a table spoonful four or five times a day.

Two parts of garlic, and one of rue, steeped in vinegar, and sweetened with honey. A tea spoonful may be taken, after every coughing.

A table spoonful each of wheat bran, and flaxseed; four ounces of raisins, and a lemon, sliced, all infused in a quart of boiling water, to which add sugar. Dose, a wine glassful three or four times a day.

Liquorice, slippery elm, Indian turnip and elecampane—make a syrup. Take three times a day.

For the whooping cough.—Take equal parts of liquorice, sulphur, fresh butter, and spermaceti.

Or, pine boughs, winter green, and sweet oil.

For cough and asthma.—Take balm of gilead buds, tinctured in spirits.

Or, coltsfoot, spikenard, and balm of gilead.

For a cough.—Honey, hoarhound, liquorice and slippery elm.

Or, tar water.

For cough and pain in the stomach.—Take a tea cupful of hard

soot: boil and strain. Add one fourth of a pound of honey. Take a little before eating.

Or, Take balm of gilead buds, balsam of fir, and half a pint of sunflower seeds. Boil the seeds to half a pint, then add the best of gin, one pint, with the rest. Take a little in the morning.

For a cough—Take six ounces of extract of liquorice, one pint of white wine vinegar, one ounce of oil of almonds, and one ounce of laudanum. Dissolve the liquorice in the wine, and add the other articles. Dose one tea spoonful after every coughing.

Wild liquorice, thistle roots, and arch-angel, of each a large handful; water, three quarts. Steep to three pints, drain off, and add four ounces of loaf sugar.

For Hoarseness.---Take three drops of black snake's oil, or of rattlesnakes' oil, at bed time. Also, a syrup made as follows—Seneca snake root, one fourth of an ounce; liquorice root, two ounces; and one large onion, sliced; simmer in two quarts of water to a pint; strain and add an ounce of loaf sugar. Dose, a table spoonful four or five times a day.

Or, skunk cabbage root, or ball, pulverized, and mixed with molasses or honey. Dose a tea spoonful four or five times a day.

Or, rub the soles of the feet with garlic and lard, beaten together, at night, repeating till cured.

Or, take sweet oil, half an ounce at a dose. Rub the chest with the same.

Or, a conserve of three parts of green comfrey, and one part of wild turnip, bruised fine, and mixed with sugar.

For the Asthma.

Vomit, when necessary, with lobelia, or blood root.

For the spasmodic asthma.—Brown paper, dipped in a strong solution of salt petre---dry it, burn, and inhale the fumes when the fit is on.

Or, which is superior to any thing else I am acquainted with—stramonium leaves, soaked in a solution of salt-petre, dried and smoked, as the above. This never fails to relieve in a spasm of the asthma.

Limewater, a table spoonful three times a day, with from fifteen to twenty drops of the tincture of stramonium in each dose.

Or, Limewater, with wild turnip.

The oil or decoction of sunflower seeds is excellent.

Take one pint of brandy, a small handful each of blue flag root and skunk cabbage, and one ounce of spirits of turpentine. Mix all together, and, when digested, take three or four table spoonsful a day.

Skunk cabbage root, or balls, pulverized, and taken in molassses.

Skunk cabbage root, tar, masterwort, smellage and ginseng. Make a syrup, and sweeten with molasses. Dose, a wine glassful three times a day.

Take spermaceti, honey, hyssop, rue, sugar and ginger—make a syrup, or conserve.

For the dry asthma—raw garlics.

Take one drop of skunks' *strong* oil, on sugar, once a day, for a few weeks, and then increase to a drop twice a day, till well.

Drink, daily, a tea of arsesmart, sweetened with honey; and if necessary, foment the chest with oats fried in vinegar.

Take five handfuls of coltsfoot, three do. ground ivy, two of hoarhound, two of hyssop, one of wormwood, and one of maiden-hair: boil in six quarts of water, to four; and add sugar enough to preserve it Dose, a tea spoonful, three times a day.

For Palpitation of the Heart.

Take motherwort; castor, one fourth of an ounce; and skunk cabbage root. Infuse in one pint of spirits. Dose a tea spoonful, or more, three or four times a day.

Or, tincture of stramonium—ten to fifteen drops, three times a day.

For Pain in the Chest, &c.

For pain in the breast—Take elecampane root, snake root, comfrey, spikenard, burdock, bittersweet, wild cherry bark, Solomon seal: infuse in rum, and sweeten. Dose proportioned to its strength.

Pain in the stomach—Take wild indigo root, in decoction, for almost every affection of the stomach—A table spoonful three times a day.

Or, boil tansy in mountain wine, and take a draught at night.

Or, balm of gilead buds infused in cider for a bitter.

Or, drink plentifully of mayweed tea.

For a weak stomach—Take a handful each of wild cherry and peach tree bark, and half an ounce of cinnamon. Boil to a pint, and add a pint of brandy. Dose, a table spoonful three times a day.

For Headach.

If from acidity in the stomach—Soak the feet in warm water; and

take pearl ash, the size of a kernel of corn, dissolve in cider and drink.

Or, put a tea spoonful of ginger and a table spoonful of magnesia in half a pint of cold water, and drink.

For a snuff—Coltsfoot, pulverized ; mix half and half with Scotch snuff.

Cephalic snuff.—Take roots of daisies, yarrow, and white hellebore; coltsfoot leaves, and bayberry bark, each one ounce, finely pulverized and sifted. Mix well, and drop one drachm of essence of bergamot in it ; then bottle up. Take a small pinch at bed time.

For the Toothach.

Chew the xanthoxylum, or toothach bark; a piece the size of the finger nail is sufficient at a time. Repeat till the pain ceases. This is as effectual as any thing of the stimulating kind.

In obstinate tic douloureux, pain, or rheumatism in the upper jaw and face, roasted fresh potatoes, applied hot, very frequently gives relief.

Opium, camphor, oil of cloves, or oil of peppermint, a pill or drop placed in the tooth, will sometimes relieve.

Or, smoke stramonium seeds, or leaves, in a pipe.

For Diarrhœa and Dysentery.

Take rhubarb one scruple ; toasted nutmeg fifteen grains; pearl ash, ten grains ; syrup of orange peel, enough for a bolus. Take occasionally.

Or, which is excellent, a decoction of witchhazle bark drank freely, with boiled milk and sugar.

Or, gizzard skins, dried and pulverized, a half tea spoonful four or five times a day. This is not outdone by any other remedy.

For Dysentery—Parched or roasted corn, pulverized, and boiled in milk, fifteen or twenty minutes. A gill may be eaten every hour.

Place a quantity of peach or cherry bark, and sugar, on a net or grating in the top of a proper vessel, with a quantitiy of brandy in the bottom of it. Set the brandy on fire, and let the blaze act on the sugar and bark till the sugar is melted down and the bark consumed, forming a syrup in the bottom of the vessel. A table spoonful or more of this may be taken several times a day, in obstinate dysenteries, and is considered almost a specific cure.

Culver's root will often cure the dysentery.

In severe cases of bilious diarrhœa, twenty grains of salt petre, or about the size of a common bean, may be dissolved in a gill of water, and a tea spoonful taken every hour, till the disease is checked. I have seen this give relief in the last extremity.

For Dysentery—All mucilaginous substances are proper, as conserves of comfrey, slippery elm, gum arabic, &c.

Also, alkalies, as the chalk julep.

Pluerisy root, in powder, may be administered with great advantage in all cases of dysentery.

Night shade is said to be a specific in this disorder; but it requires great caution in its use. A grain of the pulverized leaves, or two drops of a saturated tincture, is sufficient for a dose for an adult.

When the bowels are very much eroded and irritated, laudanum may be added to the other remedies. Laudanum and gum arabic is a useful formula in dysentery.

Clysters of starch, with cranesbill and laudanum, are serviceable to allay the irritation of the intestines.

Or, to ease pain, give a few drops of laudanum in hot saffron tea.

Take a tea cupful of wheat flour—boil it in a bag two hours, till it becomes hard. Grate it, and take a tea spoonful, in milk, two or three times a day.

Or, hard hack, or ox balm, in decoction.

Or, use white ash physic, and drink a tea of arsemart and mullen.

Or, take a spoonful of plantain seed, bruised, morning and evening, until it stops.

Or, the leaves of plantain, boiled in milk, and taken freely.

Or, a nutmeg, pulverized, in the yolk of an egg.

Or, rice boiled in milk.

Or, equal parts of sweet oil, West India molasses, and West India rum. Mix, and simmer them to a consistence of honey.

Or, green blackberries, dried and pulverized—a tea spoonful in cinnamon water, night and morning.

Or, slippery elm, scraped, with water, brandy and sugar.

Or, white oak bark, and mullen leaves, each a handful—boil in rain water. Then burn a pint of brandy with a pound of sugar, and add.

After purging sufficiently, give the following decoction:—Take the roots of comfrey and Solomon seal, each two ounces; tormentil root, three drachms; white oak bark, one ounce; reduce these to a powder, and boil them very gently in three pints of water to a quart, and towards the last of the coction, add one drachm of good cinnamon, and a large nutmeg bruised; and when cool, a gill of Madeira wine, and as much refined sugar as will render it agreeable to the palate. This has cured hundreds.

For the Piles.

Mullein decoction injected, and mullein leaves applied.

Stramonium leaves applied, or an ointment of stramonium.

Plantain, wild indigo, and bittersweet, in decoction, form an excellent wash for the piles.

One ounce of Goulard's extract, in one quart of spirits, for a wash. This has been sold in the shops as a specific.

Pumpkin seed oil, applied, is a valuable remedy. Or, the "bittersweet ointment."

Brown sugar and pulverized oyster shells, mixed in a cataplasm.
Tobacco ashes and palm oil : an ointment.
Sitting over the steam of a strong decoction of oak bark, is of great benefit.

For Fistula and Piles—Take the expressed juice of skunk cabbage, one pound, fresh butter, one pound, and mutton tallow, half a pound : simmer for two hours, and then press out the ointment for use.—Anoint the part twice a day for ten minutes.

Along with these applications, internal remedies must not be neglected.
Internal remedy for fistula and piles—Take sulphur and elecampane, each one ounce; fennel seeds, half an ounce ; black pepper, or tincture of xanthoxylum,, two drachms; and balsam copaiva, with honey, enough for an electuary. Dose, the size of a walnut, twice or thrice a day.

For Diabetes.

Take half an ounce of pulverized kino, and two ounces of opium. Infuse in a quart of spirits, and shake them together for a week.—Dose, from fifteen to thirty drops, twice or thrice a day.

Tincture of cantharides—let it be taken daily till a slight degree of irritation is perceived in the kidneys and urinary passages : then desist for a time, and again repeat, till cured.

Prince's pine, gravel weed and wintergreen, in decoction. Drink freely.

Take a goat's horn, and put it so near the fire as to raise blisters : scrape them off, and raise more, till the horn is used up. Pulverize this substance fine, and give in doses of a tea spoonful twice a day in cold water.

For Flatulency, Wind Colic, &c.

Remove the cause, whether it be acidity, debility, or coldness in the stomach.
For present relief, give first of all, the pleurisy root, in powder, a tea spoonful at a dose, repeating every fifteen minutes.
Or, take two parts each of angelica and pleurisy root, and one part of sweet flag, and infuse in brandy for a bitter.
Or, bayberry bark, two ounces ; grains of paradise, one ounce ; ginger half an ounce ; and rust of iron, one drachm ; digest in a pint of spirits, and take a table spoonful three times a day, till well.
Or, essence of peppermint, a large dose, will give immediate relief.
Or, caraway seeds, three drachms at a dose.
Elixir vitriol is of great service in flatulent complaints.
The common pains and disorders of the stomach may almost inva-

riably be removed, by turning down half a pint of boiling water, as hot and as fast as it can be taken.

Obstinate fixed pains in the sides and loins of many years standing, have soon yielded to the following carminative:—Bayberries, six drachms, grains of paradise, two drachms; socotorine aloes, and rust of iron, each two scruples; spirit of turpentine, two drachms; and simple syrup enough to make an electuary. Dose, the size of a walnut night and morning.

This is a powerful medicine.

In wind and bilious colics, and in iliac passion, purgative and stimulating clysters are of great service. Also clysters of yeast; or of tobacco smoke.

In bilious colics, quick purges are necessary.

The crawley, or fever root, cannot be given amiss in any species of colic. Alone, or taken in tea of pleurisy root, it is superior to any thing else in common use.

If necessary, foment the pit of the stomach with hops or oats fried in vinegar. Use friction freely on the bowels.

For Cholera Morbus.

Take an ounce of cinnamon water, a grain of ipecac thirty five drops of laudanum, a drachm of spirits of lavender, and two drachms of tincture of rhubarb, to be taken at one draught, which will give immediate relief.

Put a table spoonful of hot ashes in a tumbler of cider, and give the patient three table spoonsful of it. This commonly cures in half an hour. If the dose is thrown up, repeat.

In all cases promote the vomiting till the offending matter is ejected.

Pearlash, in solution, may be given to allay the irritation of the stomach.

Or, sal æratus and rhubarb.

For Epileptic Fits, Cramps, Convulsions, &c.

Take two ounces of stramonium seeds, pulverized, one ounce of castor, and half an ounce of opium. Digest in a pint of spirits eight days, and strain. Dose, from fifteen to twenty-five drops three times a day, fasting.

Stramonium, and all antispasmodics are proper.

To break epileptic fits, put a spoonful of salt in the patient's mouth. This will give quick relief in most cases.

Procure a black snake's skin and tie it around the patient's waist, the flesh side next the skin, to be worn continually. At the same time drink constantly a tea of dogwood chips, tinctured with brandy.

Take equal parts of gum myrrh, sweet oil, spirits of turpentine and sulphur. Dose, from fifteen to forty drops.

Take roots of comfrey, sassafras, burdock, elecampane and horse radish, and tops of hoarhound and raspberry ; each a handful. Simmer in water for eight hours, and drink a gill four times a day, for a week before the full and change of the moon.

Or, purslain tea for a constant drink.

Take a handful each of white garden lilly root, black snake root, and plantain, boil to a pint, strain and add a pint of rum and a pound of sugar. Dose, a gill three or four times a day.

Crawley, valerian, and stramonium probably comprise as much virtue in curing these disorders, as any other articles. They, however, like all others, require to be persisted in for some time to conquer this disease entirely.

For nervous fits and weakness, calves' feet jelly, tinctured with cloves, &c. is very strengthening and restorative.

For cramps.—The cramp, or high cranberry bark, given in tea, will relax them in almost all cases.

For Palsy.

Give hot stimulants internally, and apply externally, with friction.

The phosphoric ether, prudently managed, is probably as effectual as any other means that can be used.

Or, electricity, may be tried.

Xanthoxylum bark, prickly ash, galangal root, grains of paradise, &c. may be employed with advantage in palsies. Also horse radish, mustard seed, and burdock seed.

For Jaundice.

If from an obstruction from biliary calculi, give emetics.

Barberry bark, in decoction; soot tea; and bayberry bark, in tincture; are all excellent.

Or, the juice or decoction of dandelions.

Or, hog's or beef's gall, in pills or bitters.

Raw eggs, three or four times a day, in wine, helps greatly in the cure of jaundice.

Barberry, wild cherry bark, and yellow walnut bark, in decoction.

Or, walnut bark, saffron and celandine, in decoction.

Or, take every night, on going to bed, two or three pills of Castile soap, and drink plentifully of soot tea.

Or, infuse half a pound of blood root in five pints of old rum, and take half a wine glassful three times a day on an empty stomach, increasing the dose.

Or, extract of boneset, in pills.

Take one gallon of cider, one dozen of eggs, half a pint of hard soot, one double handful of wild cherry bark, and a handful of prickly ask. Boil. Add half a pint of treacle, four pounds of sugar, and four spoonsful of ginger. Dose, half a gill three times a day.

Take tamarisk or tamarack bark, one handful, and sow bugs, a table spoonful: infuse in a pint of Teneriffe wine. Dose, half a wine glassful three times a day.

Excellent for heat or pain in the stomach, or any internal pain.

For Dropsy.

Take artichoke leaves, three handfuls; bruised juniper berries, one quart; scraped horseradish, one handful; green fir tops, two handfuls; and bruised mustard seed, two table spoonsful. Mix, and steep in two gallons of water to one. Dose, for an adult, half a pint morning and evening.

Make a tea of dwarf elder roots, for daily drink. Continue it for thirty days.

Or, make a strong decoction of milkweed roots, and drink a wine glassful three times a day.

Or, a decoction of white clover flowers. Drink freely.

Or, take masterwort root, half an ounce; and the bark or flowers of dogwood, one ounce; infuse in a bottle of cider, and drink.

Or take a handful of ashes of wormwood—infuse in a quart of gin, and shake it well together. Dose, half a wine glassful or more.

Or, take four ounces each of fennel seeds, juniper berries, and orange peel. Simmer in water, strain, and add as much gin as will keep it. Dose, a wine glassful three times a day.

Take half a pound each of hoseradish and parsley; one ounce of oxymel of squills; two ounces of Virginia snake root; half a pound of white oak bark; half an ounce of rust of iron. Put the whole in two gallons of sound cider, in a stone jug, and cover it tight. Let it digest, near a fire, for four or five days; then strain, and bottle up tight. Dose, half a wine glassful three times a day, fasting.

Take a handful of rose willow bark, and half a peck of dry chesnut leaves: boil in five quarts of rain water to two; and add a tea spoonful of sulphur. Dose, a tea cupful three times a day.

Boil one ounce of seneca snake root to three gills, and strain.—Give half a table spoonful every hour till the whole is used, which will, wholly or partially carry off the water. After which, give the following:—Rust of iron, one ounce; masterwort root, pulverized, half an ounce; bark or flowers of dogwood, one ounce; and ginger, half an ounce; all pulverized fine, and mixed for powders. Dose, a tea spoonful three times a day in molasses.

Take one pint of bruised mustard seed; two handfuls of bruised horse radish; eight ounces of lignum vitæ, and four ounces of Indian hemp-root. Infuse in seven quarts of sound cider, and let it simmer on hot ashes till reduced to four quarts. Dose, a wine glassful four times a day. Rust of iron may be added.

Apply hot stimulating cataplasms to the feet and legs; as horse-radish, mustard seed, Cayenne pepper, &c.

To evacuate the water by urine, infuse thirty or forty cuckle burs, cut fine, in a quart of Holland gin, and give the patient a wine glassful three times a day, if he can bear it. Give blue flag or mandrake physic occasionally; the mandrake may be given in gin, with fennel seed, to prevent griping and wind. For strengthening the system, and evacuating the water moderately, take lignum vitæ chips, burdock root, bittersweet, coltsfoot, aniseed, fennel, and Solomon seal—a decoction, for daily drink.

For Worms.

Take skunk cabbage ball, one ounce; whitewood bark, and Indian hemp root, each one ounce; all pulverized fine and mixed.—Give from a half to a whole tea spoonful three mornings in succession, before eating.

Or, essence of wormwood, and turpentine dropped on sugar.

Or, the red berries of black alder, made into a syrup.

Or, walnut shucks, in decoction.

Or, old tobacco pipes, pulverized fine, and given in molasses.

Worm syrup—Take one pound of roots and leaves of the great plaintain; four ounces each of unicorn root, black alder bark, and Indian hemp roots; and three ounces of roots and leaves of skunk cabbage. Boil all in two gallons of water to three quarts: strain, and add two quarts of molasses, or four pounds of sugar, and boil to the consistence of molasses.

Children from two to four years of age may take half a wine glassful every night and morning for three days before the full and change of the moon, which will bring away the worms entire.

For the Stone and Gravel.

The juice of horsemint, and the juice of red onions, are said to be almost a specific cure for the stone.

Or, cleavers, and oil of pumpkin seeds.

Take arsesmart, a large handful, make a decoction and add a gill of gin. Take the whole in twelve hours. This has discharged a table spoonful of gravel stones at a time.

For Sore or Inflamed Eyes.

Laudanum, brandy, and spring water—a wash.

Or, wormwood tops, with the yolk of an egg.

Or, a fomentation and poultice of hops.

Take stinkweed, or stramonium leaves: bruise them, and wet with milk, and mix with rye flour. Put it between a cloth and lay on.

Take the expressed juice of house leeks, and put it in a new egg-shell, with two tea spoonsful of honey. Set it on hot ashes and skim off the scum when it rises. Apply to the eye.

Or, take the pith of sassafras and lobelia leaves, each a small handful, and infuse in one quart of water. Add a gill of the juice of roasted onions, and a table spoonful of honey. Mix. Put a few drops in the eyes, if inflamed, three or four times a day.

Or, take twenty grains of white vitriol, twenty of sugar of lead, six of salt, six of opium, and six of blood root. Dissolve all in one pint of soft water, and use as the above.

To remove the discoloration of a blood shot eye—apply fresh killed flesh to the eye, repeating it every hour till the coagulated blood is dispersed. Or, apply the breast of a live chicken, with the feathers picked off, to the eye.

For General Debility.

The Tonic Tincture.

To invigorate the system—Take juice of sage, one gill; cinnamon and ginger, each one ounce; fresh angelica root, bruised, one ounce; fresh spikenard root, two ounces; saffron and galangal root, each two ounces; and cloves one ounce. Put all into a brass kettle, and steep in six quarts of Malaga wine for two hours. Bottle it up. Dose, half a wine glassful every morning, increasing.

Take comfrey, Solomon seal and raisins, each six ounces: put them in six quarts of water and simmer a while. Then add two ounces of pearled barley; and steep to two quarts. Then turn off the liquor, and add a pint of brandy and two ounces of loaf sugar. Dose, two-thirds of a wine glassful, three or four times a day.

Debility in old age—Tar water, morning and evening.

For dyspepsia—Take one pint of hickory ashes, and a tea cupful of hard soot: infuse in one quart of boiling water. Take a little, three or four times a day.

Dyspeptic pills—Take four ounces each of white oxide of bismuth, extract of gentian, and socotorine aloes; two ounces each of colocynth, Castile soap, and gamboge; oil of cloves, one drachm. Pulverize and mix, for pills. Commence with one every three hours, till the bowels are loosened, and then take one morning and evening. This preparation has been highly celebrated.

For Rheumatism.

Chronic—Take half a pound each of sarsaparilla, and lignum

vitæ, three ounces of prince's pine, and two ounces of wintergreen: boil in five gallons of water to one gallon. Strain, and add three pounds of sugar. Dose, a wine glassful three times a day.

Take one ounce of seneca snake root; two ounces of white pine bark; two ounces of burdock seed; an ounce and a half of prickly ash bark: boil all in four quarts of water, to three, and take half a pint, morning and evening, fasting.

This preparation will be found to possess great efficacy.

Take cider brandy, sulphur and hops, for a drink; and cider brandy, sulphur, and Cayenne pepper, for a wash. This has given immediate relief in the most inveterate cases of chronic rheumatism, lumbago, and hip gout.

Or, take sulphur and honey.

Or, essence of hemlock, twenty or thirty drops at a dose, in five-finger leaf tea.

Or, boil nettles soft—foment with the liquor and apply the herbs as a poultice.

For a plaster—Take laudanum, white turpentine, shoemaker's wax, a beef's gall, and camphor. Digest in spirits enough to cover them, in an earthen pot, covered, till it is thick and sticky—apply as a plaster to the pained part.

Take linseed oil, and fish worms, a good quantity.—Stew them till they crisp. Apply the liquor. It is powerful.

Put four ounces each of unicorn root, prickly ask bark, and blood root, bruised, into four quarts of old Jamaica rum, and let it digest by the fire in a jug, for a week, shaking it frequently. Dose, a table spoonful three times a day, increasing to a wine glassful, as the patient can bear it.

Also, drink four times a day, a decoction of half a pound of prickly ash bark, two ounces of toothach bark, one ounce of bitter-sweet, and four ounces of squaw root; boiled in eight quarts of water to the consumption of four.

Rub the pained parts twice a day, for ten minutes each time, with the following ointment: boil two handfuls of the leaves of skunk cabbage and arsesmart, each, in two pounds of hogs lard, until the leaves crisp; then strain the ointment, while hot, and add one ounce of fine powdered roll brimstone. Apply this, and cover the parts with flannel.

For Scrofula, or King's Evil.

Frostweed, or scabious, drank daily, in decoction, and applied as a poultice, has cured numbers in this city.

Take pond lily root and prickly pear, bruise to a pumice; and add resin and beeswax, for a salve.

Also drink, for six weeks, half a pint per day of decoction of devil's bit. Or, the same quantity of ground ivy.

Take the bark of the bayberry root, pulverized, and apply to the lumps three times a day. If it breaks, wash the sore constantly with the decoction, and apply the green leaves. Drink bayberry tea constantly, a cupful four times a day.

Or, drink a tea of the scrofula plant, and apply a poultice of the same.

Take Peruvian bark in coarse powder, and seneca snake root of each two drachms; unslacked lime, four ounces; boiling water, one pint. Grind the lime with the bark and root in a mortar, adding the water by degrees: let it stand six hours, strain off, and give two table spoonsful every third hour, with as much sweet milk.

When scrofulous tumors are recent, apply tincture of cantharides with soft linen, so as not to raise blisters. If this does not soften or discuss the tumor, pound garlic to a soft pulp, add a few drops of cream, and apply it as a poultice every night at bed time. If the tumor breaks, dress it with a strong decoction of wild cherry bark in lime water, applied with lint, and covered with a plaster to exclude the air.

For Cancers.

For a salve.—Press the juice out of poke berries, and set it in the sun till it is evaporated to a salve. Apply.

Or, take the juice of sheep sorrel, and evaporate in the same manner to a salve. Apply to the cancer.

Or, take sheep sorrel, poke leaves, and yellow dock: express the juice and dry in the sun, for a salve.

Or, make a poultice of poke berries, pigweed and green of elder.

Or, apply red onion juice.

Or, make a plaster of alum, vinegar, and honey, equal parts, in wheat flour.

Or, take Indian turnip, pulverized, to make a poultice.

Dr. Henry's Cancer Ointment.—Take a pint of juice of the leaves and roots of poke weed—simmer on hot ashes in an earthen pot for a short time; then mix with a pound of fresh butter. Burn it in a frying pan, and stir in half a pint of finely pulverized gunpowder and keep it over the fire till it flashes once or twice; then set it on hot ashes in a pipkin till it is well incorporated, when it may be put in pots, and covered with alcohol to prevent its moulding.

This ointment, applied twice a day will kill the roots of a cancer.

For a stone cancer.—Take the powder of dry yellow dock root, wet with port wine, and apply it to the cancer, renewing it three times a day.

Make a daily drink of a decoction of yellow dock, and bark of black alder, each a handful, boiled in four quarts of water to two.

For Drawing Cancer Plasters.—The lead plaster.—Take half a pint of olive oil; two ounces of Castile soap, shaved fine: put them in an earthen vessel over a slow fire till they incorporate. Then

add, two ounces of red lead, and two ounces of white lead, pulverized fine. Stir the whole till it becomes the consistence of salve.

Additions as occasion requires—from one to eight drachms of corrosive sublimate to an ounce of the salve ; making four drachms the medium.

Or, add the same quantity of white vitriol.

Or, the same quantity of verdigris.

Another.—Take one gallon of urine, and two pounds of oak bark ; boil the bark in the urine, till it is reduced to two quarts ; then strain, and add—wheat flour, first made into a paste, half a pound ; honey one pound ; white turpentine, a pound and a half. Simmer to a salve. Add to this, white vitriol, pulverized, more or less, according to the strength that is required. Change it twice a day.

This plaster is said to draw out cancers as effectually, as any of the cancer plasters in use, and with far less pain.

For a plaster.—Mix soap, blood root, pulverized, and linseed oil, to the proper consistence.

Cancer root and balm of gilead buds, bruised together for a cataplasm. Or, use the cancer root for a wash.

Take a table spoonful of sweet oil twice a day, and a tea spoonful of balm of gilead buds twice a day.

For Salt Rheum.

Take wild cherry bark, tag alder, and green of elder—boil and add salt petre, the size of a walnut to a quart. Take one spoonful, morning and evening.

Also.—Use a tea spoonful of salt petre in a pint of water as a wash.

Boil one pound of plaintain in two quarts of beef brine, and one of urine, for an hour. Wash.

Or, spirits of turpentine. Anoint.

Or, take half a pound each of tar and lard. Simmer in spring water, for an ointment.

Or, marrow of beef bones, black pepper, turpentine, and brimstone.—Make an ointment.

Take half a pound each of elder bark, yellow dock root, burdock root, tag alder bark, and lignum vitæ ; and one fourth of a pound of sassafras bark. Make a syrup.

Or, make a decoction of mullein, elder, gill-go-by-the-ground, milkweed, pond lilly, and rose willow, for drink.

Or, Castile soap and Madeira wine—make a suds, and drink.—Also wash.

Or, a table spoonful of salt petre, dissolved in a quart of water.—Dose, a table spoonful twice or thrice a day. Wash with the same.

For cleansing the blood.—Take a handful each of pleurisy root, rose willow bark, spicewood bark, dock root, plantain root, dandelion root, spikenard, comfrey, and burdock ; and a little calamus.

Boil to two quarts and add half molasses. Dose, a small glassful three times a day.

For Erysipelas, or St. Anthony's Fire.

Elder flowers, in decoction, form a very good laxative in this disorder.

Take Virginia snake root, masterwort root, burdock root, white-wood bark, and ginseng root—infuse in brandy. Dose, three times a day.

Or, Castile soap and old Madeira wine—make a suds, and drink freely.

For a poultice—a rye pudding, boiled, and mixed with soft soap. Lay on three or four times.

For Scald Head.

Take a pint of tar; and a quarter of a pound each of spermaceti and mutton tallow. Boil in a quart of water an hour—skim and cool. Anoint.

Or, take dock root, low mallows, plaintain, green parsley, sulphur, beeswax, tar, and fresh butter—make an ointment.

Or, take night shade, stramonium, cicuta and yellow dock—make an ointment with tar and lard.

For a Felon, or Whitlow.

Take the scrapings of a powder horn, wet with brandy, and apply every hour.

Or, take indigo weed and blue flag roots—a poultice.

Or, two ounces each of white hellebore and blue flag, boiled in a quart of milk. Hold the finger in it when hot, and afterwards poultice.

Take a lump of rocksalt, the size of a walnut, and roast it in a cabbage leaf in hot embers for twenty minutes—then powder it, and mix it with hard soap for a salve. A little turpentine may be added. Put the finger in weak ley a few minutes every hour in the day.

Take an ounce of wild indigo root, and a quarter of an ounce of blue flag root. Boil them in urine, or in ley, and hold the finger in the hot liquor, and afterwards poultice with it thickened with rye meal. This is a certain cure.

Take one pint of the strongest drained ley, warm, and dissolve hard soap in it until is as thick as common soft soap. Then stir in one fourth of a pound of red lead, which will make it a convenient plaster, which must be applied till the wound is thoroughly cleansed.

For the Venereal Disease.

For Gonorrhœa—Take one ounce each of spirits lavender and balsam copaiva; half an ounce each of spirits of turpentine, and spirits

of nitre; and one fourth of an ounce of Harlæm oil. Shake well together. Dose, from fifteen to twenty-five drops three times a day.

Another—Take one ounce of juniper oil, and half an ounce of Turlington's balsam—mix. Dose, from thirty to sixty drops three times a day, an hour before eating, in a tumbler full of water.

Also, for an injection—To six ounces of rose water, add half a tea spoonful each of white vitriol and sugar of lead, and half an ounce of Turlington's balsam. Inject thoroughly three times a day, allowing the injection to remain a few minutes if possible.

For the Syphilis—A sailor's remedy—Take a table spoonful of gun powder, dissolved in half a gill of urine, every morning. It may also be taken in water.

For a wash for malignant and eating syphilis and other sores—Black cherry bark, boiled in urine. Wash.

For Syphilis—Take poke roots, and tamaric bark—make a decoction. Take three times a day.

For Fluor Albus, or Whites.

Take one ounce each of cherry bark and butternut bark, and four ounces of bark of rose willow. Boil to three quarts; and add a quart of Madeira wine, and six ounces of sugar. Dose, two tea cupsful a day. Omit in particular situations.

Or, boil one pound of rose willow root in six quarts of water to three; and add three pints of port wine and four ounces of sugar.—Dose, a tea cupful three times a day.

Or, Take four ounces of burdock root, two ounces of rose willow bark, one of parsley, and two of yarrow tops. Boil in four quarts of water and one of new milk to two quarts. Add sugar, and take a gill three times a day.

For injection—White oak and alum.

Or, Cranesbill, white oak, and highbriar, in decoction.

Take one handful each of tanzy, rue, coltsfoot, motherwort, fennel and wormwood; and half a pound of raisins. Boil down to two quarts, and add a pint of brandy, and half a pound of sugar.

Or, Take one ounce each of white beth root, and pleurisy root; and half an ounce of smellage seeds. Infuse in one pint of brandy. Afterwards, boil the roots to one pint of water, and add to the brandy. Add a little sugar.

Or, Take yarrow and plantain roots, and white oak bark—a decoction—inject and drink.

Or, A decoction of white hollyhock, root and flowers.

Or, Take egg shells, and scorch till brown; then mix with white turpentine into pills. Dose, one every morning till well.

For Obstructed Menses.

Horseradish and rust of iron infused in old cider.

Or, Spruce, hemlock, tansy, ergot (a very little,) pennyroyal and oak of Jerusalem—a decoction.

Or, one ounce of calamus and half an ounce of masterwort, in a quart of brandy. Dose, a table spoonful on an empty stomach.

Or, Tanzy beer.

Or, Cinnamon, cloves, spikenard and comfrey, cut fine and baked with sugar in an oven.

Or, Brooklime, in decoction.

Bearing down of the Womb.

Heartsease and arsesmart, for a decoction. Bathe.

Or, Boil flaxseed, and add mullein and heartsease, and lay across the abdomen.

Take white oak bark, beth root, crow foot, and rose leaves, each one ounce. Boil in four quarts of water to two: strain, and add a pint of port wine, and two ounces of pulverized alum. Dose.

For injections—Camomile tea.

For After Pains, Delivery, &c.

For after pains—Camomile and beth root in decoction—dose, and inject.

For a quick delivery—Take a piece of muskrat skin and steep it. Drink, and it will make quick work.

For quieting false pains—Drink a tea of red raspberry leaves.

For Flooding—Take Cranesbill, or red raspberry leaves, in decoction.

Or, Take a strong tea of rock or hard soot. It is said this has stopped the flow when all other means failed.

Salves, Ointments, Plasters, &c.

Strengthening plaster—Take the whites of two eggs, two handfuls of white oak bark, one ounce of resin, one ounce of alum, and half an ounce of camphor. Boil the bark to half a pint; and add the rest, and simmer to a salve.

Another—Opium, hemlock gum and camphor. This will also ease pain.

Or, Pitch pine and camphor for the backach.

Another—Take white oak bark and squaw root. Boil, and add turpentine and resin, and simmer to the consistence of a plaster.

Another—Take comfrey—bruise it soft, and add turpentine and beeswax.

For a burn—Take stramonium, plantain, mullein, and night shade. Make an ointment.

Another—Tag alder bark, chesnut leaves, and sumach roots. Boil, and add fresh butter and sweet oil.

Another—Boil carrots—strain and simmer in neatsfoot oil.

For a sticking salve—Take three fourths of a pound of resin, and one ounce each of beeswax and mutton tallow—Melt together, and pour in cold water.

The following is useful to apply to any part of the body, to ease pain, asthma, constriction, &c.

Take a pound of tobacco, and a handful each, of spikenard and comfrey—boil and strain them. Add two ounces each of resin, turpentine, and beeswax, an ounce of camphor, and a small cake of soap. Simmer on a slow fire till all the liquor is gone, and it begins to foam: then stir till cool.

For healing and cleansing—Take bittersweet, plantain, and life everlasting. Make an ointment.

For cleansing—Mandrake root, pulverized, and mixed with turpentine, resin, and mutton tallow. This destroys fungous flesh.

For healing—Take plantain, prickly pear, green of elder, slippery elm, beech drops, bittersweet, yellow dock, comfrey, gravel weed, spikenard and pond lily roots. Boil, and make into salve with eight parts of mutton tallow, one part each of resin and beeswax, and a little white turpentine.

Porter's ointment, for limbering stiff joints.—Take one handful each of rue, sage, wormwood, night shade, life everlasting, green tobacco, and spikenard; and two handfuls of Porter's weed. Put them in hogs lard and simmer in brass on hot ashes for seven days. Excellent for limbering stiff joints.

For gout, rheumatism, cramps, contractions of the sinews, &c.—Take a young fat dog, kill him, scald and strip off his hair. Then, from a small incision, take out the contents of his belly, and put in the cavity two handfuls of nettles, two ounces of brimstone, a dozen of eggs and four ounces of turpentine, well mixed together. Then sew up his belly, and roast him before a fire, and save the oil. This is to be applied to the parts affected, warm, and rubbed in by the fire.

Or, the dog being prepared in the same manner, fill his belly with a pint of red pepper, a pint of fish worms, the bark of sassafras roots, and three ar four green frogs; roast him in the same manner, and save the drippings. This is a valuable ointment for rheumatisms, contractions of the tendons, nervous affections, burns, &c.

That these preparations, although singular, are valuable, no one need doubt.

Take two pounds of tobacco, one pound of resin, one pound of turpentine, one pound of lard, and two ounces of beth root. Boil the tobacco and beth root, and add the other ingredients, simmering them till the water is evaporated.

This salve has been highly recommended for relieving pains in any part of the body; and for curing old sores, fistulas, cutaneous eruptions, &c.

For fœtid ulcers on the legs.—Dissolve ten grains of corrosive sublimate in a pint of fresh lime water. Wash the ulcers twice a day with this.

Also, apply a poultice of blood root and beth root, pulverized, and mixed with honey. If the leg be swelled, poultice with slippery elm bark.

For swellings and sores.—Take one pound of the juice of the green leaves of skunk cabbage; one pound of fresh butter, and half a pound of mutton tallow. Put these in an earthen pot and simmer two hours. Anoint twice a day.

For contracted tendons.—Anoint with neatsfoot oil, and bind on flannels dipt in it while hot.

For the itch.—Sulphur, turpentine and hogs lard. Mix, and anoint the soles of the feet, and palms of the hand, and hold to the fire. Take sulphur inwardly.

For tetters.—Take half a pint of brandy, half a gill of tar, and a table spoonful of potash. Melt together, and apply with a feather.

To disperse pain.—Take ground mustard seed, mix with vinegar and flour, and apply as a poultice.

Or, take stramonium, boil and strain, add turpentine, and simmer to a salve. In fits this may be applied to the pit of the stomach.

Take stramonium seeds, and bitter sweet bark. Boil and strain: add fresh butter, lard, mutton tallow, beeswax and resin. Simmer to a salve. This will be found an excellent salve for common purposes, on sores.

To scatter a swelling.—Take a double handful each of wormwood, rue, camomile, and fever few—pound together, and simmer in hogs lard over a slow fire.

For any foul sore.—Take Castile soap, chalk, and Harlæm oil.—Triturate them together. Apply.

To cleanse an ulcer.—Fill the sore with wild turnip, pulverized.

Or, take blood root and mandrake. Mix, and apply.

For a drawing poultice.—Take bark of the root of sumach.

Or, soft soap, sugar and flour; mix. This may be used to bring deep matter to the surface.

For ague in the breast.—Take six or seven leaves of strong tobacco, and boil it in two quarts of urine. Strain, and add a quarter of a pound each of beeswax, turpentine and resin. Simmer till it is as thick as wax, and apply to the breast.

For wounds from nails, &c.—Take bittersweet, dock, plantain, yarrow leaves, rose leaves, stramonium and elder flowers. Boil, and add, beef's gall, resin, mutton tallow, and beeswax. Simmer on a slow fire.

A cooling salve, for piles, chapped hands, &c.—Take green frogs, green of elder, plantain, parsley and scabious. Simmer in fresh butter, and strain.

For a sore throat.—Take one pint of linseed oil; one fourth of a pound of resin, half a pound of sugar, and half a pound of soap.—Melt together; apply externally to the throat.

For a wen.—Milk weed juice rubbed on.

To destroy inclination for Onanism.—Apply camphor to the testicles, by means of a suspensory bag, for two or three weeks. It must not be allowed to remain longer than this time, as it might produce decay in the parts.

An excellent plaster for a weak back.—One ounce of Burgundy pitch, camphor, and black pitch, and half an ounce of white turpentine. Melt together for a plaster.

To destroy pimples on the face.—Rub magnesia on a woollen cloth, and rub on the face.

Or, to a pint of lime water, add a tea spoonful each of white vitriol and sugar of lead. Wash.

Foot's salve for fever sores.—Take resin and beeswax, each a pound and a half; hogs lard, three pounds. Simmer the whole together, for three or four hours, and when partly cool, add two ounces of oil of spike.

Common salve.—White turpentine, beeswax and mutton tallow, equal parts; a little honey, and the yolk of an egg. Melt together. Used in fresh wounds, &c.

Anti-phlogistic Plaster.—Take the bark of sumach roots, spikenard, hops, arsesmart, wormwood, and wild indigo roots, or blue flag, of each a double handful; put them all in an earthen vessel, with two quarts of vinegar, and keep it warm for twenty-four hours, or until the vinegar is half evaporated; then press the roots and herbs, and let the liquid settle; after which add one pound of red lead, and one quart of sweet oil, and simmer them all together over a moderate fire, continually stirring it for five or six hours, or until it will work like wax. Add to it a little previous to its being taken off, two ounces of laudanum, and when taken off, two ounces of camphor, and one ounce of salts of nitre. Continue stirring it till cool; then work it like wax, and put it in boxes for use.

This plaster proves a safe and efficient remedy in all cases of external inflammations, such as biles, bruises, wounds, or any hard or swelled tumors; in old ulcers, fever sores, scrofula, ruptures, ague in the breast, pain in the stomach, for sore throat, or quinsy; is a good strengthening plaster, and is preferable to a blister in moderate cases. It should be spread on thin leather, and changed when necessary.

A Strengthening Plaster.—Take one beef's gall; Castile soap, two ounces; Burgundy pitch, or hemlock gum, six ounces; brandy, half a pint; camphor and opium, each one fourth of an ounce; spirits of turpentine, one spoonful: all to be simmered down to a plaster, and spread on leather.

MEDICAL ELECTRICITY.

The application of this subtile fluid to medicinal purposes, was thought of soon after the discovery of the electric shock. At the first introduction of electricity, as a remedy, it was very highly celebrated for its efficacy in a number of diseases; and after various turns of reputation, its medical virtues seem now to be pretty well established.

The medicinal operation of electricity may be referred to its stimulant power. It produces forcible contractions in the irritable fibre; excites therefore to action, if duly applied; and when in excess, immediately exhausts irritability. It possesses the important advantage of being brought to act locally, and of being confined to the part to which it is applied, while it can also be applied in every degree of force.

Electricity is applied to the body under the form of a stream, or a continued discharge of the fluid, under that of sparks, and under that of shocks; the first being more gentle, the second more active, and the last much more powerful than either of the others. The stream is applied by connecting a pointed piece of wood, or a metal wire, with the prime conductor of the electrical machine, and holding it by a glass handle, one or two inches from the part to which it is to be directed. A very moderate stimulant operation is thus excited, which is better adapted to some particular cases, than the more powerful spark or shock. The spark is drawn by placing the patient on the insulated stool, connected with the prime conductor, and, while the machine is worked, bringing a metal knob within a short distance of the part from which the spark is to be taken.

A sensation somewhat pungent is excited, and slight muscular contractions may be produced; these effects being greater or less according to the distance at which the knob is held, if the machine be sufficiently powerful. The shock is given by discharging the Leyden phial, making the part of the body through which it is intended to be transmitted, part of the circuit. The sensation it excites is unpleasant, and the muscular contractions considerable, if the shock be moderately strong.

The general rule for the medical employment of electricity, is to apply it at first under the milder forms, and gradually to raise it, if necessary, to the more powerful. Mr. Cavallo, who has published one of the latest and best treatises on medical electricity, entirely disapproves of giving violent shocks, and finds it most efficacious to expose the patient to the electrical aura discharged from an iron or wooden point; or, if shocks be given, they should be very slight and

not exceed thirteen or fourteen at a time. In this way he recommends it as effectual in a great number of disorders. The patient may be electrified from three to ten minutes; but if sparks be drawn, they should not exceed the number of shocks above mentioned.

Rheumatic Disorders, even of long standing, are relieved, and generally quite cured, by only drawing the electric fluid by a wooden point, from the parts, or by drawing sparks through flannel. The operation should be continued for about four or five minutes, repeating it once or twice every day.

Deafness, except when occasioned by obliteration, or other improper configuration of the parts, is either entirely or partly cured by drawing the sparks from the ear with the glass tube director, or by drawing the fluid with a wooden point.

Toothache, occasioned by cold, rheumatism, or inflammation, is generally relieved by drawing the electric fluid with a point, immediately from the part, and also externally from the face. But when the body of the tooth is affected, electrization is of no use, for it seldom or never relieves the disorder, and sometimes increases the pain to a prodigious degree.

Swellings, in general, which do not contain *matter*, are frequently cured by drawing the electric fluid with a wooden point. The operation should be continued for three or four minutes every day, and in obstinate cases it is necessary to persevere in its use for several weeks.

In inflammation of the eyes—the throwing of the electric fluid by means of a wooden point, is often attended with the greatest success; the pain being quickly abated, and the inflammation being generally dissipated in a few days. In these cases the eye of the patient must be kept open; and care should be taken not to bring the wooden point very near it, for fear of any spark. Sometimes it is sufficient to throw the fluid with a metal point; for in these cases, too great an irritation should always be avoided. It is not necessary to continue this operation for three or four minutes without intermission, but after throwing the fluid for about half a minute, a short time may be allowed to the patient to rest and wipe his tears, which generally flow very copiously; then the operation may be continued again for another half minute, and so on four or five times a day.

Palsies are seldom perfectly cured by means of electricity, especially when they are of long standing; but they are generally relieved to a certain degree; the method of electrifying in those cases is to draw the fluid with the wooden point, and to draw sparks through flannel, or through the usual covering of the parts, if they are not too thick. The operation may be continued for about five minutes every day.

Ulcers, or open sores of every kind, even of long standing, are generally disposed to heal by electrization. The general effects are a diminution of the inflammation, and first a promotion of the discharge of properly formed matter; which discharge gradually lessens, according as the limits of the sore contract, till it be quite cured. In these cases the gentlest electrization must be used, in order to avoid too great an irritation, which is generally hurtful.

To draw or throw the fluid with a wooden, or even with a metal point, for three or four minutes per day, is fully sufficient.

Cutaneous Eruptions have been successfully treated with electrization ; but in these cases it must be observed, that if the wooden point be kept too near the skin, so as to cause any considerable irritation, the eruption will be caused to spread more ; but if the point be kept at about six inches distance, or further if the electric machine be very powerful, the eruptions will be gradually diminished till they are quite cured. In this kind of disease, the immediate and general effect of the wooden point, is to occasion a warmth about the electrified part, which is always a sign that the electricity is rightly administered.

Scrofulous tumors—when they are just beginning, are generally cured by drawing the electric fluid with a wooden or metal point from the part. This is one of those kinds of diseases in which the action of electricity requires particularly the aid of other medicines in order to effect a cure more easily ; for scrofulous affections commonly accompany a great laxity of the habit, and a general vitiation, which must be obviated by proper remedies.

Locked-jaw—has in some instances been speedily cured by small shocks passing through the jaws.

Nervous headachs—even of long standing, are generally cured by electrization. In this disease, the electric fluid must be thrown with a wooden, and even sometimes with a metal point, all round the head successively. Sometimes exceedingly small shocks have been administered ; but these can seldom be used, because the nerves of persons subject to this disease are so very irritable that the shocks, the sparks, and sometimes even the throwing of the electric fluid with a wooden point, kept very near the head, throw them into convulsions.

Obstructed menses,—a disease of the female sex, that often occasions the most disagreeable and alarming symptoms, is often successfully and speedily cured by means of electricity, even when the disease is of long standing ; and after the most powerful medicines, used for it, have proved ineffectual. The cases of this sort, in which electrization has proved useless, are so few, and the successful ones so numerous, that the application of electricity, for this disease, may be justly considered as an efficacious and certain remedy.

Small shocks, that is, about the twentieth of an inch, may be sent through the pelvis ; sparks may be taken through the clothes, from the parts adjacent to the seat of the disease ; and also the electric fluid may be transmitted, by applying the metallic, or wooden extremities of two directors to the hip in contact with the clothes ; part of which may be removed, in case they be too thick. Those various applications of electricity should be regulated according to the constitution of the patient. The number of shocks may be about twelve or fourteen. The other applications may be continued for two or three minutes, repeating the operation every day. But either strong shocks, or a stronger application of electricity than the patient can conveniently bear, should be carefully avoided ; for by those means, sometimes disagreeable symptoms are produced.

The application of electricity to the cure of diseases has been,

within a few years, brought to a great degree of perfection in the United States, by the exertions and skill of several gentlemen, among whom may be numbered, Dr. Jesse Everett, of New-York city. By their improvements, the electric fire has been rendered more completely manageable, and is applied with an increased prospect of success to a greater variety of diseases, than formerly.

It may be observed, that, in many cases, the help of other remedies will be required, to assist the action of electricity, which, by itself, would perhaps be useless; and, on the other hand, electrization may often be applied to assist the action of other remedies, as of sudorifics, strengthening medicines, &c. It not unfrequently happens that electricity is relinquished as an unsuccessful remedy, when by a more rigid perseverance, a cure might have been effected.

TABLE OF CONTENTS.

Index to Anatomy.

Abdomen,	69	Mesentery,	72
Absorbents,	46	Milk vessels,	73
Anatomy,	1	Mucilage sacs,	39
Arteries,	40	Muscles,	22–37
" action of	44	" Physiology of	37
Bladder,	74	Nerves,	49–53
Blood, circulation of	68	" Physiology of	54
Bones, doctrine of	1		
" Table of	2	Pancreas,	73
" of the Head	4		
" of the Face	9	Secretion, physiology of	58
" of the Chest	13	Spleen,	73
" of the Loins	14		
" of the Pelvis	ib	Veins,	44
" of the upper extremities	15	" action of	46
" of the lower extremities	16	Vessels, doctrine of	39
" formation of	18	Viscera, doctrine of	59
" connexion of	19	" of the Head	60
Bone membrane,	18	" " Brain	ib
		" " Eye	62
Cartilages,	ib	" " Ear	ib
Chylification,	71	" " Nose	63
		" " Mouth	ib
Digestion,	70	" " Tongue	ib
		Viscera of the Neck	64–65
Fluids, doctrine of	79–83	" " Chest	66
Fœtus,	78	" " Breast	ib
		" " Pleura	ib
Glands, doctrine of	56	" " Diaphragm	ib
Gall bladder,	72	" " Lungs	ib
		" " Heart	67
Integuments,	59	" " Abdomen	69
		" " Caul	70
Kidneys,	73	" " Stomach	ib
		" " Intestines	ib
Ligaments,	20	" " Pelvis	74
Liver,	72	" " of the male organs of generation	ib
Menstruation,	76	" " female do.	76

Index to Surgery.

Affections of the Brain— 88
" from external violence 88
" from extravasation 92
Amputation . . 120
" remarks on 122
" of the thigh 123
" " leg 126
" " hip joint 127
" " arm 128
Aneurisms . . 146

Bleeding . . . 84

Cutting out a cancer 138

Dislocations . . 111
" of the lower jaw 113
" " head ib
" " spine 114
" " collar bone ib
" " shoulder joint 115
" " elbow joint ib
" " wrist 116
" " hand & fingers ib
" " hip joint ib
" " knee pan 118
" " knee joint ib
" " ancle 119
Distorted limbs . . 119
Division of bridle of tongue 137
" " salival duct . ib
Fractures, gen'l observations 100
" of the nose . 103
" " collar bone & ribs ib
" " breast bone 104
" " haunch bones 105
" " shoulder blade ib
" " upper arm bone ib
" " fore arm . 106
" " wrist, hand & fingers ib
" " thigh bone 107
" " knee pan - 108
" " shin bones 109
" " foot and toes 110
Fractures, compound ib

Issues . . . 128

Opening the wind pipe 142
" " gullet 144
Opening dead bodies 148

Tapping in the chest 128
" " abdomen 133

Wounds . . . 86

Index to Art of Healing.

Art of Healing, . 151
Apoplexy, . . 208
Appetite, want of . 249
Asthma, . . . 205

Bruises, . . . 293
Burns, . . . 292
Bites of serpents, 355

Cancer and schirrus, . 283
Chicken pox, . . 184
Cholera morbus, . . 219
Colds and coughs, . 197
Colic, . . . 213
Consumption, pulmonary 200
Costiveness, . . 248
Cramp in the stomach, 258

Diseases of Women, 294
Menstrual discharge, 295
Menses immoderate 298
Fluor albus, or whites, ib
Cessation of menses, 299
Bearing down of womb, 300
Green sickness, . 301

Diseases of Pregnancy, 302
Quickening, . . ib
Nausea, and vomiting, 303
Heartburn, . . ib
Headache with plethora ib
Costiveness, . . ib
Toothach, . . ib
Longing, . . 304
Hysterics, . . ib

Suppression of urine, 304
Itchings, . . ib
Puffy swellings, . ib
Cramps, . . . ib
Restlessness, . . . ib
Varicose veins , 305
Jaundice, . . ib
Incontinency of urine, ib
Pain in the loins, . ib
Distention of skin, . ib
False pains, . . ib
Convulsions, . . ib
Abortion, . 306
Management of childbed women, . 309
Classification of labors ib
Stages of labor, . 310
Symptoms preceding labor, ib
Symptoms accompanying labor, . ib
Process of natural labor, 311
Management of after birth, 313
Tedious labours, ib
Difficult labors, . 314
Directions for forceps, 315
Preternatural labours, 318
Familiar observations, 323
Conclusion, . 324
Treatment after delivery, 326
After pains, . ib
Costiveness, . ib
Inflammation of the womb, ib
Suppression of the lochia, ib
Inflammation of breasts, 327
Chapped nipples, . ib
Child bed fever, . ib
Milk fever, . 328
Diseases of Infants, 329
Of the meconium, 330
Thrush, . . 331
Hiccups, green stools, ib
Chafing, . 332
Stoppage of the nose, ib
Vomiting and loosness, ib
Cutaneous eruptions, 333
Croup or rattles, . 334
Teething, . . ib
Rickets, . 335
Convulsions, . 336
Dropsy in the head, 337
Observations on diseases &c. of children, . 338
Diseased parents, 340
Clothing of children, 341
Food of children, 342
Exercise of children, 344

Diabetes, . . 229
Diarrhœa, . 221
Disorders of the senses—
" of the eye, 287
" of the ear, 288
" of taste and smell, 289
" of touch, 290
Dropsy, . . 244
Drowning, . 358
Dysentery, . 244
Earach, . . 239
Epilepsy, . 210
Erysipelas, . . 184

Fainting, . . 260
Fevers, general view of, 154
" *continued*, 161
" bilious, . 172
" inflammatory, 162
" intermittent, 157
" nervous, . 165
" putrid, malignant, &c. 168
" remittent, . 159
" scarlet, . 174
Flatulency, . 261

Gout, . . 263
Gravel and stone, . 229

Headach, . . 235
Heartburn, . 250
Hiccup, . . 199
Hysteric affections, 262

Impotence, . 278
Inflammations and abscesses, 291
Inflammation of the lungs, 191
" " diaphragm, 190
" " brain, 192
" " bladder, 217
" " eyes, 195
" " intestines, 212
" " kidneys, 216
" " liver, 218
Involuntary discharges of blood, . 231
Bleeding at the nose, ib

Spitting of blood, . 231
Vomiting of blood, . 232
Itch, . . 282

Jaundice, . . 242

Leprosy, . . 282
Lock jaw, . 357
Low spirits, . 262

Madness, . 194
Measles, . . 184
Melancholy, . 255
Midwifery, . 309
Mumps, . . 178

Nervous diseases, . 251
Night mare, . 259

Pain in the face, . 239
Pain in the stomach, . ib
Palpitation of the heart, 251
Palsy, . . 247
Piles, . . 234
Pleurisy, . . 188
" bastard, 190
Poisons, . . 346
" mineral, . ib
Poisons ærial, . 353
" animal, . ib
" vegetable, . 352
Putrid sore throat, 175

Quinsy, . . 176

Rheumatism, . 267

Sardonic laugh, 258
Sea sickness, . 327
Sciatica, or hip gout, 268
Scrofula, or king's evil, 279
Scurvy, . . 281
Small pox, . 179
St. Vitus' dance 257
Suppression of urine, 228

Tooth ach, . . 236

Ulcers, . . 293

Venereal disease, . 269
Vomiting, 223

Whooping cough, . 199
Worms, . . 240

Index to Materia Medica and Pharmacy.

Adder's tongue . . 414
Agrimony . . . ib
Alder, black . . . 415
" swamp, or tag . ib
Alexander, or wild parsley ib
Aloes . . . 416
Alum 531
Alcohol 532
Angelica . . . 414
Aniseed . . . 416
Antimony . . . 531
Archangel . . . 416
Arrow root . . 417
Arse-smart . . . 416
Arsenic, oxide of . 534
Asarabacca . . 417
Assafœtida . . ib
Avens . . . 418

Balm . . . 419
" of gilead . . 420
Balsam copaiva . 419
" of fir . . ib
" of Peru . 420
" Tolu . . ib
Barbadoes tar . . ib
Bearberry . . . 421
Barley . . . . ib
Bayberry . . . ib
Bazil, sweet . . 422
Bearberry . . . ib
Beech drops . . . ib
Beth 423
Betony . . . ib
Birch, black . . ib
Bistort, or snakeweed 424
Bittersweet . . . ib
Blackberry . . 425
Black pepper . . ib
Black snake root . ib
Blessed thistle . . 426
Blood root . . . ib

Blue cardinal flowers . . 427
Blue flag . . . . . ib
Blue vitriol . . . 535
Bloodwort, striped . . 432
Boneset 428
Borage, or bugloss . . 431
Borax 535
Briony 429
Brooklime . . . . . ib
Broom 430
Butcher's broom . . . ib
Buckthorn . . . . . ib
Buckhorn brake . . . 431
Bugle, sweet . . . . ib
Burdock . . . . . ib
Burnet saxifrage . . 433
Burgundy pitch . . . ib
Butternut . . . . . ib
Button snake root . 432

Cajeput 433
Camomile 434
Camphor . . . . ib
Cantharides . . . 536
Caraway 434
Carbonate 538
Carolina pink . . . 435
Carrot, wild . . . 436
Cascarilla . . . . ib
Cassia . . . . . ib
Castor oil 437
Castor 536
Catnip 438
Cat-tail flag . . . ib
Cayenne pepper . . 437
Cedar, red . . . 438
Celandine . . . 439
Centaury . . . . ib
Chalk 538
Charcoal . . . 537
Chemical analysis of medicinal substances 372–392
Cherry, wild . . 440
Cicuta, hemlock . ib
Cicely, sweet . . 442
Cinnamon . . . 436
Cleavers . . . 441
Cloves 442
Cohush, blue . 443
" black . . . ib
" red . . . . ib
" white . . ib
Colombo 444
Coltsfoot 445
Colt tail, or fireweed . ib
Collection, &c. of plants 528
Comfrey 445
Copper 539
Cowhage 446
Cow parsnips . . ib
Cranes's bill . . . ib
Crawley, or fever root 448
Cresses, water . . 447
" sciatica . . ib
Crosswort . . . 449
Crowfoot, meadow . 448
Cubebs 449
Culver's root . . ib

Dandelion . . . . ib
Daisies 450
Deadly night shade . ib
Deerfood . . . 452
Devil's bit . . . 451
Dock, yellow . . 452
Dogsbane, bitter . . 451
Dogwood . . . ib

Elaterium, or wild cucumber 452
Electricity . . . 613
Elder, common . . 452
" dwarf . . 453
Elecampane . . . ib
Elm, slippery . . 454
Epsom salts . . . 539
Ergot 454
Eryngo . . . . . ib
Ether 539

Fennel 458
Fern, male . . . 455
Fever bush, or spice bush ib
Feverfew . . . . ib
Five-finger, or cinquefoil 456
Flax . . . . . ib
Foxglove . . . . ib
Frostwort . . . 457
Fumitory . . . 458

Galbanum . . . ib
Gallnut . . . . ib
Gamboge . . . 457
Garden peony . . ib
Garlic . . . . ib

Gentian . . . 460
Ginger . . . 461
Ginseng . . . 460
Golden rod, . 461
Gold thread, . . ib
Golden seal, . 462
Gooseberry, . ib
Goosefoot, stinking, 463
Ground ivy, . 462
Guaiacum, . . 463
Gum arabic, . . ib
" tragacanth, . 464

Hardhack, . 466
Harts' horns, . 540
Harts' tongue, . . 464
Hearts' ease, . . 467
Hellebore, white . 464
" black, . 465
" stinking, . ib
Henbane, black . 424
Hemlock tree, . 467
High cranberry, or cramp-bark, . . . 468
Hoarhound, . . 465
Hog weed, . . ib
Honey, . . . 540
Hops, . . . 466
Horseradish, . 467
Hyssop, . . 468

Iceland moss, . ib
Ice plant, . . 469
Indian hemp, . ib
Indian physic, . . ib
Indian turnip . 470
Indigo, wild, . . 471
Ipecacuanha, American 470
Iron, . . . 541
" black oxide of ib
" precipitated carbonate of . . 542
" rust of . ib
" sulphate of . ib

Jalap, . . 473
Jerusalem oak, . . 471
John's wort, . . 472
Juniper, . . ib

Kino, . . 473

Ladies' slipper, . 477
Laurel, broad-leaved . ib
Lavender, . . ib
Lead, . . 543
Leatherwood, . 478
Lemon, . . 473
Lettuce, garden . 474
" wild . ib
Life everlasting, . . ib
Life root, . . ib
Lily, white pond . 478
Lime . . 543
Liquorice . . 478
Liverwort . . 475
Lobelia . . ib
Lunar caustic . 544

Materia medica, introduction to . . 391
Materia medica . 393
Classification of 395
Antacids . 411
Anthelmintics, . 412
Antispasmodics . 398
Aromatics . 399
Astringents . 400
Cathartics, . 404
Demulcents . 412
Diaphoretics, . 406
Diluents . 413
Diuretics . 406
Emetics . . 402
Emmenagogues, 405
Emollients . . 413
Epispastics . 411
Errhines . . 409
Expectorants . 408
Lithontriptics . 411
Narcotics . . 396
Refrigerants . 410
Rubefacients . ib
Sialagogues . 409
Tonics . 398
Magnesia . . 545
" alba . 544
Maiden hair . 479
Mallows low . 480
" marsh . ib
Mandrake, or may apple 479
Manroot . . ib
Manna . . 480

Marigolds . 481
Marjoram, wild . b
Marsh rosemary . ib
Masterwort . . 482
Mayweed . . ib
Maple leaf alum root 485
Meadow saffron . 482
Mercury . . 545
Calomel . 547
Corrosive sublimate ib
Cinnabar . 548
Red precipitate . ib
Mezereon . 482
Milkweed . . 483
Miseltoe of the oak . ib
Monkshood . 484
Motherwort . ib
Mountain mint . ib
Mountain dittany . 485
Mouse ear . 486
Mugwort . ib
Mullein . . ib
Mustard black . 487
Muriatic acid . 548
Musk . . ib

Nanny bush . 488
Nettle . . 487
Nitre, salt petre . 549
Nitric acid . ib
Nutmeg . 488

Oak . . ib
Oats . . ib
Olive or sweet oil . 491
Opium . . 489
Orange . 491

Palm oil . ib
Partridge berry . 492
Peach . . ib
Pearl ashes . 550
Pennyroyal . 492
Peppermint . 493
Persimon tree . 495
Peruvian bark . 493
Pharmacy, introduction to 363
Pharmaceutic chemistry 335
Pharmaceutical operations . 365–372
Phosphorus . 552
Pimpernel . 495
Pink, common . 496
Pine, ground . 501
Pipsissewa, or Princes' pine ib
Plantain, rattle snake 496
Plantain, great . ib
Pleurisy root . 497
Poison ivy . 498
Poke root . ib
Poplar . 499
Poppy . . ib
Prickly ash . 500
Prickly pear . ib
Pride of India . ib
Pumpkin seeds . 501
Purslain . . ib

Quassia . 502
Queen of the meadow ib

Rattle snake root . 520
Rhododendron . ib
Rhubarb . . ib
Rose . . 504
Rosemary . . ib
Rose willow . ib
Rue garden . ib

Saffron . . 505
Sage . . ib
Sal ammoniac . 533
Sarsaparilla . 505
Sassafras . 506
Savine . . ib
Scabious . 507
Scrofula plant . 508
Scull cap . . ib
Scurvy grass . 509
Seneca snake root . ib
Senna . . 510
Septfoil . . ib
Shrub yellow root . ib
Skunk cabbage . 511
Snakehead . 512
Sneezewort . ib
Soapwort . 513
Soda . . 554
Soap . . 558
Solomon's seal . 513
Sorrel, sheep . 514
Sorrel tree . 513
Southernwood . 514
Speedwell, male . ib

Spermaceti . . 554
Spikenard . . 514
Spirits of turpentine 556
Spleenwort . . 515
Squill . . . ib
Stramonium, or stinkweed 516
Strawberry . . 518
Sublimated sulphur 555
Succory . . . 517
Sugar . . . 554
Sulphuric acid . 555
Sumach, common . 517
" Swamp . 518
Sunflower . . ib

Tamarinds . . 519
Tamarisk tree . ib
Tansy . . . ib
Tar 557
Thyme 519
Tobacco . . . 520
Tory weed . . . 520
Tumeric . . . 522
Unicorn root . ib

Valerian . . . 523
Vervain . . . ib
Vine . . . . ib
Vinegar . . . 557

Water dock . 524
White ball . . 525
White wood . . ib
Wintergreen . . 526
Witch hazle . . ib
Wormwood . . . 527

Xanthoxylum . . 520

Yarrow 527

Zinc 558

Index to Recipes and Domestic Pharmacopœia.

Anodyne Wash - 581
Anti-mercurial syrup ib

Balsams - 563
Bittersweet ointment 583
Black drops - 579
Bone's bitters - 588
British oil - 577

Cataplasms - 564
Chalk Julep - 582
Children's cordial ib
Clove jelly - ib
Clysters - 564
Conserves - 565

Decoctions - 566
Distilled waters - ib
Dover's Powders - 578

Essential oils - 567
Eye waters - 565

Fomentations - 568
Female strengthening syrup 581

Godfrey's cordial - 577

Harlæm oil - ib
Hull's physic - 484

Lee's pills - 578
Liniments, ointments, &c. 568

Mother's cordial - 580

Opodeldoc, Steer's - 578

Patent compounds 577
Pills - - 570
Plasters - 571

Remedies in particular diseases - 589–612
Syrups - - 593

Tinctures - - - 573
Tonic Tincture - - 580

Wheys - - - 576
Wines - - - 577